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OBSERVATIONS ON THE TREATMENT OF TETANUS IN HORSES.

BY J. B. GRESSWELL, M.R.C.V.S., LOUTH;

WITH SHORT REVIEW OF THE PHYSIOLOGICAL ACTION OF THE DRUGS EMPLOYED,

BY ALBERT GRESSWELL, M.R.C.S.

IN bringing before the notice of the readers of the VETERINARY JOURNAL the subject of the special treatment of Tetanus in horses, it is intended, firstly, to briefly review the physiological action of the remedies which have been advocated by various eminent authorities; secondly, to indicate the effect which has attended the use of each in our hands; and lastly, to suggest a method of treatment which some others may possibly think well to adopt.

The most important of the drugs from time to time advocated in the treatment of Tetanus in man and animals are the following, alphabetically arranged:—Aconite, amyl nitrite, belladonna and its alkaloid, atropine; bromides of ammonium, potassium, and sodium; Calabar bean and its alkaloid, physostigmia; cannabis Indica, chloral hydrate, chloroform, conia, curare, gelseminum, hydrocyanic acid, opium and its alkaloid, morphia; potash (bicarbonate and hydrate of), quinine, salicine, tobacco and its alkaloid, nicotine.

All of the above remedies have been tried in our treatment of

Tetanus in the horse, with the exception of curare, or urari, the efficacy of which we ourselves have no experience of.

We shall, therefore, not allude to this drug again; but may mention that cases of Tetanus in man have been treated by the hypodermic injection of the "South-American Indian arrow-poison," and that this remedy has been used in the treatment of Chorea and Hydrophobia in man, as well as in physiological experiments on animals, in order to paralyse muscular movements.

ACONITE.

1. *Physiological Action.*—Aconite, when given internally, always reduces the strength of the pulse, and thus retards the circulation. When administered in moderate doses this powerful depressant reduces the number of the beats of the heart, and renders the breathing slower; while, when large or poisonous doses are taken, the pulse is accelerated, and the breathing becomes sharp and hurried. Physiological observers have shown that aconite paralyses the heart of pigs, arresting its action in systole.

After death from aconite the heart fails to respond to galvanic stimulation; and it is, therefore, believed that this poison affects the cardiac muscle itself.

According to the experiments of Ringer and Murrell, aconite paralyses all nitrogenous tissues, and affects all the structures of the heart—viz., in the first place, its ganglia, next the nerves, and, finally, the muscular substance. Regarding the action on the nervous system, Boehm concludes that aconitia first paralyses the sensory, and then the motor, part of the cord; while Liegois and Hottot believe that it first paralyses the perceptive centres above the spinal cord, and afterwards the terminations, and, lastly, the trunks of the sensory nerves.

The latter observers record that frogs poisoned with aconite lose sensation, whilst voluntary and reflex action remain; and reflex action itself ceases whilst the animal still retains voluntary power.

On administering strychnia, these observers produced Tetanus, the paroxysms of which could be excited by irritating any part of the body. They, therefore, conclude that at this stage the sensory nerves are not affected, and that anæsthesia depends on the influence of the aconite on the sensory perceptive centres.

After a time, however, irritation of the afferent nerves fails to excite a tetanic paroxysm ; wherefrom they conclude that aconite next paralyses the terminations, and then the trunks of the sensory nerves. According to Ringer, aconite is a protoplasmic poison, and destroys the functions of all the nitrogenous tissues—first, of the central nervous system, next of the nerves, and, last, of the muscles ; but it has an especial affinity for the sensory apparatus, paralysing first the sensory perceptive centres.

Aconite, like tartar emetic and *potash salts*, is a powerful depressant ; and Ringer suggests that these drugs do not merely depress through their paralysing effect on the heart, but that they depress also by their poisonous action on the central nervous system and on the motor nerves and muscles.

Value of the preparations of Aconite in Tetanus.—In the treatment of severe cases of Traumatic Tetanus, we have found few drugs of more benefit than aconite. It is our practice, in cases of Acute Tetanus following the infliction of an injury, to administer hypodermic injections of about ten minims of Fleming's tincture. The efficacy of this method of treatment is more marked in plethoric animals, and when the febrile symptoms manifested are of a severe character. But ordinary cases of Idiopathic Tetanus do not seem to derive much benefit from aconite ; in such cases, as well as in those forms of Traumatic Tetanus supervening after the lapse of a long interval from the infliction of the injury, we prefer the hypodermic injection of morphia. The use of aconite in the treatment of Tetanus in the horse requires care and judgment.

Amyl Nitrite.

Physiological Action.—When the vapour of amyl nitrite is inhaled, there is caused a large and rapid fall of the blood pressure, and the heart's action becomes accelerated. This fall of the blood pressure is due mainly to the great dilatation of the arterioles, and, after large doses, to depression of the heart. If the inhalation be stopped, the arterial blood pressure rapidly returns to the normal.

The dilatation of the arterioles is believed by some to be due to the direct action of the drug upon them, and not to any

influence exerted on the vaso-motor centres. Dr. Brunton believes that the nitrite partially paralyses the sympathetic ganglia and their motor nerves. Nitrite of amyl does not affect the motor or sensory nerves until just before death.

Dr. H. Wood has shown that loss of reflex action and of voluntary power occurring after large doses is due to the depressing action of the drug on the motor tracts of the cord, and, to a slight extent, on the motor nerves and on the muscles.

On the sensory tracts of the cord it seemingly has no effect, nor has it any on its co-ordinating centres.

It abolishes reflex action, but whether it depresses the reflex function of the cord is uncertain, as it may simply act on the motor part of the cord.

Value of Nitrite of Amyl in Tetanus.—We are not aware whether this remedy has been much used by others in the treatment of Tetanus in the horse, but we believe that but few cases have been treated by it.

In man this remedy has been used in Tetanus to allay the spasmodic attacks ; and, though we have not a large experience of its value in equine practice, we believe that its action for this purpose is not so efficient or beneficial as is the inhalation of chloroform : yet, nevertheless, it does seem to have a beneficial action ; but that relaxation of the jaws to be obtained by inhalation of chloroform did not follow in the instances in which we gave the nitrite a trial.

Belladonna and Atropine.

Physiological Action.—If a small dose of atropine be injected into the jugular vein of a dog, the cardiac and respiratory movements will be quickened, and the arterial blood pressure will be raised.

The quickening of the heart's action is due to the paralysing of the cardiac inhibitory filaments of the vagi ; the acceleration of the respiration is due to stimulation of the respiratory centre in the medulla ; while the raising of the blood pressure is due to contraction of the systemic arterioles, probably through the medium of the sympathetic.

Atropine has both a paralysing and a stimulant action on the spinal cord ; but the former effect is greater than the latter.

In order to show the spinal stimulant action of atropine, animals whose respiratory muscles may be paralysed without causing death have been experimented upon. In the frog, a dose below the fatal minimum paralyses, firstly, the cutaneous sensory nerves, next the motor nerves and spinal cord; it does not impair idio-muscular contractility.

After the lapse of a variable number of hours or days, tetanic symptoms, not unlike those of strychnia-poisoning, are produced; these are due to the excitant action of the alkaloid on the spinal cord. This effect of atropine on the spinal cord was pointed out by Dr. Fraser, who has shown (1) that in frogs tetanic symptoms follow the subcutaneous injection of a dose of sulphate of atropia equivalent to about 1,000th of the weight of the animal; (2) that this Tetanus sometimes sets in on the second day, but more frequently on the third, fourth, or fifth; (3) that it varies in its duration from a few hours to seventeen days; (4) that it is due to the action of the drug on the cord (medulla oblongata and medulla spinalis). The afferent or sensory nerves are unaffected, or but little affected, by atropia. The accelerator nerve of the heart is probably stimulated by it.

Ringer thus summarises the probable effect of atropia:—

(1.) It tetanises the cord, and heightens its reflex function.

(2.) It stimulates the respiratory centre and the inhibitory centre of the heart.

(3.) It stimulates the cardiac accelerator nerve or its centre.

(4.) It stimulates the vaso-motor centre, and so heightens arterial pressure.

(5.) It paralyses the motor nerves, first affecting the trunks.

(6.) It paralyses the terminations of the vagi, both in the heart and lungs.

(7.) It paralyses the terminations of the secretory nerves of the salivary glands, and perhaps those of the sweat glands.

(8.) It paralyses the terminations of the inhibitory fibres of the splanchnics.

(9.) Large doses slightly depress the functions of the afferent nerves.

(10.) It paralyses the terminations of the oculo-motor nerves, and stimulates the sympathetic, so far as the iris itself is concerned.

It appears, therefore, whilst it acts as a stimulant to a large part of the central nervous system, to many of the nerves it operates as a paralyser.

Value of Belladonna and Atropine in Tetanus.—Belladonna and its alkaloid, atropine, have been extensively used for the treatment of Tetanus. The late Mr. D. Gresswell used it for some time, but renounced it entirely after a good trial, believing it to be of little value. We have also arrived at the same conclusion, and never use it now in the treatment of this disease in the horse.

In the VETERINARY JOURNAL, March, 1884, Mr. Davis records that he administered one-grain doses of sulphate of atropia every three hours, but without effect on the spasms. From the above physiological review of the action of this drug, it seems, moreover, unlikely that we could expect that it would prove very beneficial in Tetanus.

Mr. Charles Gresswell, of Nottingham, also is of one opinion with us regarding the use of belladonna in Tetanus.

BROMIDES OF AMMONIUM, POTASSIUM, AND SODIUM.

Physiological Action.—We need say little of the physiological action of the bromides, as their use in disease depends more upon the accumulation of clinical evidence of their value rather than upon physiological experimentation, which has yielded somewhat contradictory results.

The bromides, according to Brown-Séquard, contract all the blood-vessels, producing anæmia of the brain and spinal cord, thus diminishing the excitability of these organs. Bromide of potassium induces in animals a decided diminution of reflex irritability and of cutaneous sensibility; and experiments render it probable that this diminished reflex irritability is due in part to the effects of the drug on the reflex function of the cord, and in part to its effect on the sensory nerves.

Value of the Bromides in Tetanus.—The bromides have been extensively given in the treatment of Tetanus, and are of undoubted efficacy in diminishing the severity and duration of the paroxysms. These remedies, however, cannot be relied upon in the treatment of Tetanus, but they may be administered along with other medicines of greater potency.

We do not often use the bromides now, unless the case be of an unusually mild type, as their efficiency, never very great, cannot be relied on in severe cases.

The bromides used by us were the salts of potassium and ammonium.

Calabar Bean and Physostigmia.

Physiological Action (Abstracted from Dr. Fraser's investigations).—An animal when under the influence of a small but fatal dose speedily manifests a slight tremulousness, which increases until the whole frame becomes limp and flaccid; then follows general paralysis, the bowels and bladder are emptied involuntarily, and the pupils generally contract.

At this stage all reflex action of the cord is destroyed, and if the animal is anywhere irritated, the contractions respond to the call. Respiration becomes gradually slower and slower, and at last ceases. Immediately after death the pupils dilate and the muscles appear to be unaffected; they contract when cut, and respond to the irritation of their nerves.

The paralysis of the muscles has been shown by Dr. Fraser to be due to changes effected on the *spinal cord itself by the poison*. He found that he could excite no muscular contractions by galvanising any part of the cord of an animal poisoned by the bean; while the motor nerves still retained their functions, and easily transmitted impressions to the muscles, which, on their part, freely responded to very slight stimulation of their proper nerves.

The reflex functions of the cord were destroyed long before the nerves lost their conducting power. After the loss of reflex power in animals poisoned by Calabar bean, pretty active muscular contractions could be excited by mild galvanic stimulations of the motor nerves.

Dr. Fraser recommends, from his physiological researches, Calabar bean as an antidote to strychnia; and he points out its superiority to curare, which paralyses only the motor nerves, while the former paralyses first the cord, and then, after some time, the motor nerves.

Physostigmia raises the blood pressure, and is also a respiratory poison, and, indeed, generally kills by paralysing the respiration.

Value of the Calabar Bean and its Alkaloid in Tetanus.—Reasoning from the facts above mentioned, we should expect that Calabar bean would prove a most valuable medicament in Tetanus. Some cases in man have been treated by physostigmine, and have terminated successfully, but in equine medicine this powerful spinal sedative has had a far larger and more extensive trial.

It would be interesting if statistics as to the result in each case could be collected, as opinions as to its value are not unanimous.

Our experience of the drug is more limited than in the case of other remedies; but, judging from what we have seen of its value, we do not think so favourably of its action as to warrant us in relying on its efficacy.

Cannabis Indica.

Physiological Action and Value in Tetanus.—Of the physiological action of cannabis Indica much still remains to be learnt.

In its anodyne and soporific action it resembles opium. It has been chiefly employed in medicine for its anti-spasmodic and anodyne powers, and has been administered in man and in the horse for the treatment of Tetanus. In our experience cannabis Indica is not of great value in Tetanus in horses, and we, therefore, do not advocate its use.

(*To be continued.*)

OBSERVATIONS ON THE NORMAL INTERNAL TEMPERATURE OF INDIAN TRANSPORT ANIMALS.

Paper I.

BY JOHN HENRY STEEL, M.R.C.V.S., A.V.D., ON SPECIAL SERVICE, RANGOON.

Subjects.—Thirty-two male camels, mostly old and in poor condition, of the Bangalore Transport, observations made between eight and ten o'clock on morning of the 23rd October, 1884, when the external temperature was 73° F. in the shade at 8 a.m. The camels were standing in two rather close sheds, none suffering from "musthi" (rutting).

Place.—The observations were all taken at the rectum, and

with self-registering clinical thermometer as supplied for Government service.

Preliminaries and Detail.—Most of the camels were quiet during examination. They were always made to "sit"; occasionally, in resentment of manipulation of the anus, they tried to bring the buttocks to the ground, or violently attempted to bite or to rise. Two assistants were necessary—one to hold the tail and one the head. Often a number of ectozoa were collected beneath the tail. Sometimes dung-balls in the rectum prevented free introduction of the instrument. Occasionally there was spasmodic closure of the anus. Generally removal of the dung-balls, lubrication of the anus with ghee (butter), and gentle pressure, sufficed for introduction of the instrument. A few of the observations were made with the bulb penetrating only about three inches, but generally the instrument was passed in as far as practicable. In all cases it was retained four minutes. The investigation was made under my close and exact supervision, the thermometers being used by Farrier-Major Inglis and Farrier Havildar Saffar, of the 1st Madras Light Cavalry, and by Salootri Abdool Rhymon, of the Madras Transport branch. Conductors Ward and Maddox assisted in supervision and time-taking.

Results.—The average internal temperature of the camel, taken at the rectum of an animal under the conditions described above, is 99° F.

2. The maximum reading obtained was 102·6° F., but the animal was probably the subject of some fever,* since only in two other cases was the temperature over 100° F., *i.e.*, 100·4° and 100·8°.

3. The minimum reading obtained was 98·2° F.

4. The average poor condition of these camels renders it probable that the normal reading is somewhat higher that 99° F. I should put the health limits at 98° F. to 101° F.

5. Thermometry promises to prove a valuable addition to our means of exact diagnosis in cameline diseases.

N.B.—Prior to this investigation, I felt interested to determine whether, since in so many features of structure the camel resembles the horse, and in others the ox, his temperature is high,

* He died the following day of Anthrax—a rare disease in the camel.

like that of the ox, or moderate, like that of the horse. I find the latter to be the case ; but, it must be remembered, Government camels are often scantily fed.

Subjects.—Three elephants of the Bangalore Transport—two female, one male—standing in the open at 10 a.m. Temperature taken at rectum.

Preliminaries and Detail.—These animals are very nervous at the operation. Require to be judiciously handled, or they will rise from the kneeling posture which they should be made to assume, impede the operation by passage of urine and fæces. There is a lot of loose skin around the anus, so the thermometer has to be passed in very deeply. The tail is powerful, requires two men to hold it, and then is apt to press on the hand at the anus very forcibly.

Results.—My researches so far lead me to believe that the normal internal temperature at the rectum is 97·6° F.—a reading equal to the normal of the horse therefore shows high fever.

SCAPULO-HUMERAL DISLOCATION IN THE HORSE.

BY J. K. PILKINGTON, M.R.C.V.S., GARSTON.

HAVING read the article on this subject in the VETERINARY JOURNAL for December, 1884, by P. S. Abraham, M.A., B.Sc., F.R.C.S.L., etc., I would like to add a few remarks of a case under my care, which I had intended as an article for this Journal on some future occasion.

The accident in this case, which I wish to bring under notice, happened thus :—

A bay mare, four years old, had only arrived in Liverpool two days from Ireland. The owner, a friend, and their two apprentices took her for a drive into the country for a trial. On their return journey the friend wished to see if she was steady in saddle, so placed his apprentice on her back, contrary to the wishes of its owner. After galloping some considerable distance at a furious pace, it dashed on the narrow pathway between the wall and lamp-post, striking its right shoulder against the latter, throwing both heavily to the ground. I was sent for, a mile in distance.

Finding the animal still on the ground, with great difficulty we got her upon her feet, scarcely able to stand.

On examination, I found the shoulder very much swollen and bruised, slightly deformed, and she was unable to bear any weight upon it. I was of opinion that it was partial fracture of the scapula and dislocation of the joint. Many who were present said it would be better to destroy her, that she would never do any good. But the owner and myself wishing to give it a trial, we had a low float brought, and with plenty of assistance, got her in, and had her taken to a loose-box at my place.

Treatment.—I at once applied hot-water fomentations, with a strong solution of arnica, of course giving a small cathartic dose, and continued doing so for seven or eight days, when I found she placed the leg in a proper position (bearing no weight), swelling reduced, but scarcely able to move. I then placed a seton from midway in front of the scapula, down under the chest in front of shoulder-joint; then applied a blister, which was repeated several times.

When the discharge was at its height, on going to examine her in the morning, I noticed symptoms of Tetanus—no doubt traumatic, from the effects of the wounds and seton.

Let me here refer briefly to the case of P. S. Abraham, in which he says, "Finally, ten weeks after the accident, Tetanus sets in." I think that case was traumatic, from the "sore on the withers caused by the tight strap" mentioned. I at once removed the seton and applied a solution of belladonna, keeping the parts well cleansed. She, however, got over that in a few days. Afterwards she went on very well, and in eight or ten weeks after the accident was turned out to grass, where she remained for three months, at the end of that time she could walk fairly well, but there was a shooting or gliding forward motion of the whole joint at every movement of the leg, no doubt caused by the atrophied condition of the caput magnum, medium and parvum, and the teres externus and internus. She remained in this condition when taken home, the owner putting her to slow work, which she does pretty well, with the exception of an occasional trip, being unable to extend and govern the toe in a proper manner.

My reason for entering so minutely into details is that this case was brought to trial. Verdict for plaintiff, with good compensation and costs.

COCAINE.

BY G. D. WHITFIELD, M.R.C.V.S., A.V.D., 5TH LANCERS, DUBLIN.

THIS new local anæsthetic is an alkaloid produced from the leaves of the *Erythroxolon Coca*, a shrub cultivated on the slopes of the Cordilleras of Bolivia, Peru, and Columbia. It was first produced by Nieman in 1860, who found by its local application that it produced anæsthesia of the mucous membrane of the tongue. It afterwards fell into disuse. In 1872, Dr. Hughes Bennett presented a thesis to the University of Edinburgh, entitled "Erythroxolon Coca," and in which the physiological properties of the coca and its alkaloids were fully experimented on. Its effects on the nervous system he sums up as follows :—

" 1st. In small doses, not ending fatally, cocaine causes partial loss of sensibility. 2nd. In doses which are subsequently fatal, it induces, prior to death, general loss of sensibility. 3rd. It destroys the excitability of the posterior columns of the cord, and paralyses the entire system of peripheral sensory nerves, but the anterior columns and the peripheral motor nerves remain intact. 4th. It induces spontaneous convulsions, but, unlike those induced by strychnia, they are not excited by peripheral irritation, owing to paralysis of the sensory nerves. 5th. Special experiments proved that the nerve-endings in the skin and mucous membranes were rendered inexcitable, apart from any action the drug had upon the nerve-centres."

It is this latter action, combined with its limitation to the tissues to which it is applied, that has brought cocaine so prominently forward during the last few weeks, and which renders it so valuable in operations on the eyes, tongue, and larynx. It would be well to notice a few experiments made in the laboratory of Professor Stricker. " A few drops of an aqueous solution were dropped into the eye of a guinea-pig ; the animal closed the eye for about a minute, then opened it, and a peculiar expression of rigidity was gradually assumed ; the cornea was then touched with the head

of a pin—no reflex closure of the eye, or throwing back of the head; on the contrary, perfectly quiet, and by the employment of a stronger irritation it was seen that the eye was completely anæstheticised." In another case he says: "I have scratched the cornea upon which I operated with a needle, pricked the same, irritated the cornea with an induction current, I also cauterised it with a pencil of nitrate of silver until it became as white as milk, all without a single movement on the part of the animal." These experiments conclusively show a loss of sensibility of the superficial parts of the eye, but from the cases recorded, this entire loss of sensibility does not extend to the deeper-seated parts; for instance, in extraction of cataract pain is mitigated, but decidedly felt. The anæsthetic power can only be increased to a certain limit, but the extent of that limit is sufficient to very greatly diminish the sensibility of the deeper-seated parts.

Cocaine may to some extent be compared to curare. The latter paralyses the terminations of the motor nerves, the former the terminations of the sensory nerves. Aconite acts in a manner the reverse of cocaine. In human surgery cocaine is used with good results in the removal of foreign bodies, in iridectomy, and removal of cataracts, tapping the cornea, ulcers on cornea in Entropium and Ectropium, and for removing Pterygiums. In equine surgery it will supply a long-sought want. Operations on the eye are always more or less difficult; the action of the retractor muscle, together with that of the membrana nictitans, is a great bar to operations being successful unless the patients are entirely under the influence of an anæsthetic, and up to this time the only one that has been used for the horse with any degree of success is a general one, viz., chloroform; and many veterinary surgeons have a great objection to using it. In the first place, the patient must be cast before the agent is administered, then extreme care is required after its administration, insomuch that an assistant ought to be available to watch the action, as some horses are more easily anæstheticised than others. What might be an ordinary dose for one, might be fatal to another. Cocaine, on the other hand, is used in a very simple manner: it is only necessary to paint the mucous membrane with an aqueous solu-

tion, or drop it into the eye, when anæsthesia takes place, lasting from fifteen to twenty minutes. A four-per-cent. solution is generally used in human surgery. The action of cocaine being to a great extent superficial, it will be as valuable to the veterinary profession as if its action was deeper seated, as our ophthalmic operations are almost entirely superficial. It will be useful in Entropium, Ectropium, wounds of eyelids, puncturing the cornea in Filaria Oculi, Pterygium, etc. In the latter it has been used with marked success in human surgery—no pain being felt during the operation. I remember removing one from a horse in India (VETERINARY JOURNAL, January, 1882), and the operation was one of great difficulty, through the persistent action of the retractor. In India many veterinary surgeons are very expert in operating for Filaria Oculi, but there are some who are not; to these, and to those who have never operated before, cocaine will be an agent of very great usefulness. At present the drug is a very expensive one—about a shilling a grain. The demand for it is almost greater than the supply. This is a great drawback to its use. The alkaloids of tea and coffee are said to be almost identical in their chemical composition with cocaine—probably they may be found as efficacious, and if so, the cost would be much less.

NOTES ON A CASE OF GLOSS-ANTHRAX AND ANTHRACOID ANGINA.

BY J. B. GRESSWELL, M.R.C.V.S., LOUTH.

IT is noteworthy that, whereas cases of Anthrax proper, or Anthrax Fever, affecting the horse are not uncommon in certain districts in the county of Lincolnshire, cases of localised Anthrax are decidedly very rarely met with in the equine species.

Indeed, during the last three years, though I have had under my notice no less than thirteen cases of Anthrax proper in the horse, the case to which it is my purpose to draw attention is the first example of localised Anthrax in the horse which I have encountered in North Lincolnshire during the same period.

On Sunday evening, December 14th, I was called to see a two-year-old bay cart filly belonging to a gentleman residing in the Wold Land, a distance of six miles from Louth.

The animal was in good condition, and had only recently been brought up from grass.

On careful examination, it was manifest that the case presented the characteristics of Gloss-Anthrax and Anthracoid Angina. The sides of the cheeks and tongue were very much swollen, and were of a dark purplish-brown hue. The tongue was hanging from the mouth, and protruded about six or seven inches. There was a copious eruption of phlyctenules on the sides and dorsum of the tongue, and also on the buccal membrane of the lips and mouth. Thick, yellow-coloured serous fluid was discharged in abundance fron the mouth and nose, and the breath was fœtid. The throat was swollen, hot, and painful, and deglutition was quite impossible. The pulse, which was very feeble, numbered eighty beats per minute, and the respiration was hurried and difficult. The temperature reached 105° F.

On the following morning the symptoms were still more exaggerated. The head and neck were immensely swollen; the tongue, still hanging pendulously, almost completely filled up the cavity of the mouth. The buccal membrane was eroded in patches, as also was the dorsum of the tongue, and yellow serum tinged with blood oozed from the mouth. The pluse was fluttering and almost imperceptible, the legs and ears were cold, the nostrils were dilated, the breath was very fœtid, the respiration was hurried and very difficult, and the animal seemed about to succumb.

The swelling in the region of the head and face more especially affected the cheeks, the body, and base of the tongue, and the tissues of the submaxillary, parotid and laryngeal regions.

As there was no prospect of recovery, the animal was shot.

INTRA-TRACHEAL INJECTION.

BY W. PENHALE, M.R.C.V.S., BARNSTAPLE.

In a translation from the *Annales de Médecine Vétérinaire*, which appeared in *The Veterinarian* for July, 1883, and again in a leader in the January number, 1884, the value of introducing medicines into the system through the bronchial mucous mem-

brane, by inter-tracheal injection, is advocated. It is quite possible this system of administering medicaments may have become very general among the veterinary practitioners of England, but as yet the success or non-success of its adoption has not been published, except by Mr. Hutton in the last issue of the VETERINARY JOURNAL, and nothing has been attempted in this way in human medicine beyond insufflation of the larynx with impalpable powders in cases of Diphtheria. As inter-tracheal injection is advocated by such high authority as M. Levi and the editors of *The Veterinarian*, there must be a good chance of its success, and some probability of its coming into favour.

Like Mr. Hutton, my observations of its utility are confined but to one malady, and I must further confess to very limited trials. But the malady is no trivial one (indeed, it often baffles all other modes of treatment), beyond which, the trials were a very decided success, and the results are borne out by a brother practitioner. Therefore, I am induced to rush into print with what may be considered a very meagre and partially developed report. I was first induced to test this novel method of administering medicine by the recommendation of my friend, Mr. C. Parsons, of Launceston, who had treated calves which were suffering badly from the presence of *Strongyli micruri* in the windpipe and bronchial tubes. He punctured the trachea of each calf with the needle of an ordinary hypodermic syringe, and injected Ol. tereb ʒii., Acid carbol. M. xx., Tr. opii ʒi. Notwithstanding the large, and, considered in the light of other days, alarming quantity of these drugs in the windpipe, all of these calves made a rapid and complete recovery without further trouble.

Acting on this suggestion, I have treated a large number of calves in the same way, and in almost every case with success; instead of Tr. opii, however, I have substituted chloroform ʒss., which I know to be a deadly parasiticide. The operation is very simple and easy to perform. I have procured a large syringe for the purpose from Messrs. Arnold and Sons, the needle of which I introduce about midway down the cervical portion of the trachea, without regard to an inter-annular space,

and inject the fluid slowly. The exhalation of the turpentine can at once be detected at the nostril; the animal appears to suffer no inconvenience beyond a slight cough. So far, I have not found it necessary to repeat the operation, although some of my cases were apparently suffering from advanced Broncho-pneumonia. Two, in particular, were suffering most acutely—grunting with that peculiar harsh, distressing sound so characteristic of the latter stages of the disease, at every expiration, and one, which I thought could not live but a few hours, had oral breathing as though suffering from oxygen starvation—doubtless due to plugging of the bronchial tubes by strongyles. Both had violent and spasmodic coughs, and were foaming at the mouth. I injected the worst of the two cases first; the operation caused a perceptible and immediate relief, the respirations per minute being lowered at once, and in a few hours were considerably diminished, and the sound not so distressing. So marked was this change, that it was noticed by the attendant—by no means a keen observer. No. 2 was operated on in the same way; both made a complete recovery. No. 1 commenced to feed on the third day after the injection, by which time nothing could be seen amiss with No. 2, beyond a slight cough. No. 1 continued to grunt a little for a week. I regret not trying this treatment some time earlier in the autumn, when opportunities offered for experimenting on lambs suffering from an analogous disease, and for which, I believe, it would be equally efficacious.

Already I feel convinced that we shall not have so much difficulty in dealing with these two maladies in the future as we have had in the past. It is pretty well known to country practitioners how deadly are the ravages of these strongyles when the disease which they induce is allowed to go unchecked; as many as thirty or forty per cent. of lambs will die, to say nothing of loss of condition, if no treatment is adopted; and I have known eight calves perish out of a herd of twelve, from the same cause. The disease, too, is pretty widely distributed, being general over England in the case of calves, and in certain seasons the counties of Norfolk, Lincolnshire, Cambridgeshire, Cornwall, Devonshire, and some parts of Somerset, suffer greatly

from the *Strongylus filaria* in the lamb. In a small practice, in the year 1875, I attended upwards of a thousand lambs suffering from this complaint. So shrouded in mystery is the life-history of these two parasites, that helminthologists are able to tells us but little as to whether they are taken up with food or water, or both, and so gain ingress to the bronchi of the sufferers. But this we do know, that it is ruinous to pasture either lambs or calves in old pastures after adult stock. The disease in calves, I believe, might be prevented every year, by keeping the animals rigidly in young grasses, and on high ground. Paradoxical though it may appear, hill farms suffer most from the *S. filaria.* But it must be confessed that our friends the agriculturists do not, as a rule, favour prophylactic measures, and are not victims to hygiene. Their usual plan is to allow the animals to contract the disease in the pastures, and then, for a remedy, turn them into either turnips or rape. Nothing could be more fallacious than this treatment, for the poor animals are already debilitated by disease, and now still more so, by not eating a kind of food to which they do not take instinctively. So, what with starvation, and the constant irritation of the strongyles, they fall an easy prey to Bronchitis and Pneumonia. It is to this stage the aid of the veterinarian is usually sought after. Hitherto, for treatment we have had recourse, and with a great deal of success, to fumigations, expectorants, and the exhibition of turpentine through the mouth; but now a still greater success will attend our efforts by adopting M. Levi's plan of administering medicine by intra-tracheal injection.

OBSERVATIONS ON SOUNDNESS.

BY R. H. DYER, M.R.C.V.S., LIMERICK.

(*Continued from page* 10.)

THE *ciliary ligament* is the bond of union between the external and middle tunics of the eye, and serves to connect the cornea and schlerotic at their line of junction with the iris, and outer layer of the choroid. The canal of Fontana is known to exist in the ligament; it is a vascular canal. The iris forms the curtain or septum between the anterior and posterior

chambers; the opening in its centre is termed the pupil, the shape of which is horizontally elliptical; the margins of the iris are obtruded upon by several small, pendulous bodies, termed the *corpora nigra*. The front surface of the iris points to the cornea, and the posterior towards the lens. The muscular arrangement is composed of two layers: the anterior one consists of radiating fibres, which converge from the circumference towards the centre, and produce an enlargement of the opening; the posterior, or circular, surrounds the pupil like a sphincter muscle, and produces contraction of the pupil. The posterior surface of the iris is of a deep purple tint, thence termed *uvea*, from its resemblance in colour to a ripe grape.

The ciliary processes consist of a number of triangular folds, formed by the plaiting of the middle and internal layer of the choroid; they are covered with a thick layer of pigmentum nigrum; when this is washed off the processes are rather white. The next tunic is the *retina*. It is composed of three layers—external, or Jacob's membrane, middle or nervous, and the internal or vascular membrane. Jacob's, when examined by the microscope, is found to be composed of cells having a tenellated arrangement; it is said to be a *serous* membrane. The *nervous* membrane is the expansion of the optic nerve; it envelopes the vitreous humour. The *vascular* membrane consists of the ramifications of the *arteria centralis retinæ* and its vein; it is a branch of the ophthalmic artery. The zonula ciliaris is a thin, vascular layer which connects the anterior margin of the retina with the anterior surface of the lens near to its circumference; the under surface of the zonula is in contact with the *hyaloid membrane*, and around the lens forms the anterior, fluted wall of the canal of Petit.

The *humours*.—The aqueous is situated in the anterior and posterior chambers; the anterior chamber is the space intervening between the iris and pupil behind. The chambers are lined by a thin layer, which is the secreting membrane of the aqueous humour; it is a weak, albuminous fluid, with an alkaline reaction; its sp. gr. is little more than water. The posterior chamber is the space bounded by the posterior surface of the iris and pupil in front, and by the ciliary processes, zonula ciliaris, and lens behind.

The vitreous humour forms the greater bulk of the globe of the eye. It is an albuminous and very transparent fluid, enclosed in a membrane of extreme delicacy—the hyaloid. From the inner surface of this membrane many thin lamellæ are pointed inwards, and form compartments or cells in which the fluid is contained. A tubular canal has been found in the centre of the vitreous humour, through which a minute artery is conducted from the arteria centralis retinæ to the capsule of the lens. The crystalline humour or lens is situated immediately behind the papillary opening, and is surrounded by the ciliary processes. It is more convex on its posterior surface than on the anterior; it is imbedded in the anterior part of the vitreous humour, separated from it by the hyaloid membrane. It is invested by a transparent, elastic membrane, the capsule of the lens, which contains a small quantity of fluid, called *liquor Morgagni*, and is retained in its place by the attachment of the zonula ciliaris. The lens consists of concentric layers, of which the outer are soft, the next firmer, and the central form a hardened nucleus. These layers are best demonstrated by boiling. The appendages of the eye are placed in close approximation to the globe; they are divided into external and internal. The upper and lower lids unite and form the canthi; the lids possess a muscular power of closing and opening: they can shut out all offending agents, they are the regulators of the rays of light. The muscles of the lid are *not* voluntary; the superior lid is more strongly developed than the inferior, it has more motion also. From the outer surface of the lid are growing long hairs; they must be intended for some specific purpose, and they doubtless are for the purpose of protecting the organ from insects, hay-seeds, etc. Each one conveys sensation. They were, by the late Professor Coleman, called *watch-dogs* of the eye; they ought never to be cut away. These hairs are also found on the under lid, but not so numerous. The range of hairs upon the upper lid are performing the office of shrouding the eye from the rays of light coming from above, which are more powerful than those coming from below. The other appendages are the eyelashes, the caruncula lachrymalis and the lachrymal apparatus, together with the conjunctiva, Meibomian glands, cartilages (the horse

has no tarsal cartilages), cellular membranes, arteries, veins, nerves, absorbents. The tegumentary cellular tissue of the lids is very loose, and is remarkable for the absence of fatty matter; it is very liable to serous infiltration. The Meibomian glands secrete a mucus to prevent impediment in opening the lids. The conjunctiva is the mucous membrane of the eye. It is found to cover the whole of the anterior surface, and is then reflected upon the lids, so as to form their internal layer to the cartilago-nictitans, and passes down to give a lining to the *ductus ad nasum.* It is most vascular where it lines the lids; where it covers the cornea it is very thin and closely adherent, and no vessels are seen there in the absence of inflammation. It differs from mucous membranes in being transparent. The *caruncula lachrymalis* is a small tubercle situated on the inner canthus; it is principally covered by common integument, a very small portion being covered by the conjunctiva. It is intended for the purpose of directing the tears into the puncta lachrymalia. In man it is said to be glandular.

The lachrymal gland is situated under the orbital arch; to gain a view of it the removal of the bone is necessary; it is pale in colour, and is of an irregular shape; it is a conglomerate gland, very much resembling externally the salivary glands; its office is to secrete the tears, which are conveyed by its ducts upon the conjunctiva, where they become diffused in two ways, namely, by their own gravity, and also by the motion of the lids. The tears are saline, and possess irritating properties often observed in Ophthalmia.

The cartilago-nictitans is a concavo-convex body lodged behind the inner canthus between the globe and side of the orbit, and covered by conjunctiva, and is attenuated on its anterior extremity; it is embedded in adipose substance, and its action is principally mechanical. The late surgeon Liston informed me, when examining me for my diploma, that he had discovered two small muscles which aided in performing its movements; the names of them I don't recollect. Its use is to dislodge anything foreign on the eye. Puncta lachrymalia are two small openings piercing the inward margins of the two lids near the root of the caruncula, the superior being smaller than

the inferior. The ductus ad nasum is the canal intended for the passage of the tears from the eye to the nose; it passes through the lachrymal bone, between it and the anterior turbinated bone, to the cuticular surface of the inner and lower part of the nostril, its terminating upon cuticular membrane is to prevent the tears from excoriating the mucous surface. In the human subject this duct is sometimes so affected that surgeons are in the habit of cutting into it, and inserting a silver pin so as to keep the canal open; I have known pins to be worn for a long period previous to recovery. The arteries which supply the globe of the eye are the ophthalmic and the arteria centralis retinæ. The appendages are supplied by the internal maxillary. These several parts are well taken care of by the quantity of adipose matter found in the orbital cavity; the case itself being lined by a dense membrane, said to be a continuation of the dura mater. The fatty substance being semi-fluid during life admits of the various movements which the eyes of the horse are called upon to perform, and it is the absence of this fatty substance, through absorption, which gives to young animals the appearance of old age.

The globe is regarded as an optical instrument of very complex construction, beautifully arranged and adapted, into which the rays of light are received, and by the medium of which agent the horse is able to take cognisance of the form, size, colour, and position of bodies that transmit or reflect it. The globe is placed in the cavity of the orbit most laterally and obliquely, which cavity is formed of eight bones—the two cavities are formed of fourteen bones—four form the outer, the portal, malar, unguis, and squamous-temporal bones (in the human subject the portal does not contribute to its formation), the inner part is formed by the sphenoid, athmoid, palatine, and superior maxilla, (the cavity of the orbit in the human subject has no orb. fossa) it is clothed with a shell of bone.

The eyeball is placed nearer to the frontal than to the temporal side. The globe is suspended in front of the eyelids, laterally and posteriorly, by its muscles, and by the optic nerve, which, together with its vessels, are enveloped in fat. The size of the globe differs in different individuals, some large horses

having small eyes, and small horses possess large eyes, and so forth. Its figure is said to be a compound of two spheres of different diameters, united in front by an elliptical line. Its axis points to a horizontal line, more outward than forward, and more forward than downward; this line intersects another horizontal line drawn directly outward at an angle of 70°, and one drawn directly outward at about 20°, the inclination downward, however, will vary with the position of the head.

The axis of the globe is not exactly that of the orbit, though it likewise takes a direction more outward than forward, for in the ordinary position of the head it is perfectly horizontal, and in consequence of the prominence of the eye next the temple, inclines more forward than the orbital axis considerably, and especially in the lateral direction. The eyes, placed as they are in the head, command nearly a whole sphere of vision; thus the horse is amply provided with visual means for seeking food and avoiding danger. I must not omit to state that I am indebted to notes taken of Professor Spooner's lectures; to Wilson's "Vademecum," and Percival's "Anatomy," for refreshing my memory so as to enable me to be precise in the anatomical description of the eye and its appendages.

(To be continued.)

BURSATTI: ITS CLINICAL CHARACTERISTICS.

BY RICHARD W. BURKE, M.R.C.V.S., A.V.D., INDIA.

(Continued from page 29.)

THERE is a department in the history of Bursatti about which, we believe, many of our readers in England may have never adequately heard, and about which not a few of them, anticipating a visit to India, may be the better for knowing something. We refer to what is called the clinical characteristics of that disease. We have contributed facts of clinical importance which contain information that may be of interest in connection with the pathology of Bursatti, advanced in preceding articles, for the better development of that important science, veterinary pathology and therapeutics, as applied especially to India. In the days to which we allude, an accurate portrayal of clinical

facts was a thing not to be indulged in every day; hence we were fain to content ourselves with ordinary fare—the consideration of mere general symptoms and of their treatment. This was by no means a complete study, or such as would suit the standard of modern thought and of present modes of inquiry. The throwing in of the accessory sciences in our inquiry into the nature of disease forms a notable help, in the present day, to the work carried on in clinical pathology.

The system of inquiry conducted here has been more on the principles of general pathology, than as a speciality, and those conducting it may be deemed rather as *comparative* pathologists than as specialists.

From 1838 to 1851 numerous essays, papers, and contributions were forthcoming on this subject of Bursatti from different sources, but especially those which came from the pens of army veterinarians serving at that time in India; and as numerous were the theories then propounded with regard to its exact nature. But it was not until 1873 that Spooner Hart, of Calcutta, an enthusiastic veterinarian and accurate observer, published his essay in a series of excellent papers to the *Veterinarian*, far in advance of all preceding descriptions, and possessing that touch of critical appreciation which alone distinguishes a practical surgeon and clinical observer. But in recent years the opinion has been gradually emerging more and more into prominence that the clinical characteristics of disease have not the value as an element of inquiry which many would assign to them—that they are not, singly, the be-all and end-all of our pathological problems. Clinical knowledge, whether viewed as an art or a calling, should ever be agreeably associated with the other departments that are interesting in science and pleasurable in inquiry. The only drawback of the system above advocated is that no durable record of the opinions of different veterinary surgeons in India are made, only a few contributions having been published in our periodicals up to the present which have any scientific bearing on the pathology of this affection. But this difficulty can be easily overcome by making public the combined views and experiences of veterinarians throughout the country who have had opportunities of studying this disease under

varied conditions of climate, treatment in adoption, etc., which may each and all exercise an influence over its course and progress and termination in different cases.

We propose in this connection chiefly to devote our attention to the consideration of the more salient particulars concerning the clinical characteristics of this disease, which, though discusssd nearly fifty years ago, are by no means an already completed work in pathology, but requiring greatly to be extended yet.

The local phenomena of the disease have for many years been a subject of special observation by veterinarians in India, yet it must be admitted that, after all, little that is definite and indisputable has been ascertained regarding what has ever been the dark side of the question, namely, the nature, causes, and classification of these phenomena. It is open for us to hope that the increased and more systematic study of pathology and its cognate sciences, may in course of time lay bare to us the benefits of those extensive observations that have preceded others of our own time. In the present consideration it is not intended to enter into the various speculations that have been current relative to this disease, but rather to take a survey of certain clinical manifestations as exhibited in some of the more important of former contributions. It is not, however, what this or that one says of the disease, but the unerring testimony of combined experince as demonstrated in the opinions of veterinary surgeons who have actually served in India, which decides its character, but a good deal may be added to that testimony, some of the more important of which, so far as they relate to the clinical pathology of this disease, we propose to bring before the notice of our readers, by the side of general experience.

So much has already been written by way of contribution to our knowledge of this disease that, important as the subject is, it may be considered to have received already a fair share of attention; but not so is the clinical aspect of it, however, which cannot, perhaps, be dwelt upon too much, if we would stimulate a practical inquiry into its pathology and causation. There is much in favour of this system of joint inquiry, which, while showing how we are all indebted to some predecessor, foreshadows a great and salutary improvement in the literature of

Bursatti, which finds its duplicate in human pathology, as we shall here endeavour to prove by recourse to comparison between the labours of human and veterinary practitioners—which may tend to counteract the errors which time-fostered notions and the views of individual experience assuredly entail. Then,—

In regard to the characteristics of Bursatti sores, Mr. Spooner Hart, in his excellent communication on the subject, on page 533 of the *Veterinarian*, describes "an indurated base extending to a depth of half an inch, or an inch." Mr. J. Burke, formerly of the Stud Department, now professor of physiology at the Lahore Veterinary School, says: "The skin surrounding the affected part, as also the base of the sore, are sometimes thickened to the extent of a couple of inches, and which are found studded with nodules characteristic of the disease (Bursatti). This thickening may sometimes extend even to the subcutaneous areolar tissue, and present a dirty, leaden hue on section." Inspecting Veterinary Surgeon George A. Oliphant, in charge of Hapur stud, now Principal Veterinary Surgeon in India, writes*: "More frequently, however, from rubbing or biting—for the sore is particularly itchy—the crown of the ulcer becomes violently detached, leaving a moist, irritable sore, *the base of which speedily becomes indurated.*"

Dr. T. W. Cooke,† formerly surgeon to the Cancer Hospital, London, writes: "I have had so many opportunities of watching growths upon the lips and tongue, and other parts, supposed to be Cancer, but which had not this especial symptom, that I feel myself warranted in giving a very strong opinion *that without an indurated base there is no Epithelial Cancer.*"

To take another feature of this disease.

Mr. Spooner Hart‡, writing on Bursatti, remarks: "Tubercles are formed prior to the rainy season, and remain *in statu quo* until about the month of May, when the skin covering them gives way, forming large ulcers, which, if allowed to go on unchecked, as the majority of them are until the rains are well set in, are aggravated by the almost constant downfall of rain, and

* VETERINARY JOURNAL, July, 1880, p. 18.
† "On Cancer: Its Allies and Counterfeits," p. 41.
‡ *Veterinarian*, 1873, p. 18.

hence the popular error that Bursatti attacks subjects only in the rainy season." We have already shown that the presence of tubercle-like nodules in Bursatti sores is diagnostic.

Dr. T. W. Cooke, on the subject of Cancer in man, on page 93, writes: "In many cases the incisions made for the purpose of removing the diseased mass have scarcely healed before '*tubercles*' have appeared around the cicatrix, or the wound itself has taken on the diseased action." Dr. Green* says: "The cells may be so closely packed as ultimately to become hard and dry like those of nails and hair, and the globes are then of a brownish yellow colour and of a firm consistence. These globes are often large enough to be readily visible to the naked eye." Billroth† considers the presence of nodules in the skin, *when numerous and well characterised, diagnostic* of one variety of Cancer he has specially studied.

Another important feature of Bursatti is the presence in the sores of pain or irritation, felt only at different intervals. And in regard to this point Veterinary Surgeon Hart‡ writes: "Bursatti sites, though healed, are liable at any tine to become irritable and to be gnawed by the horse; this act showing beyond dispute that some irritative action is going on." This pain is certainly considered very characteristic also of human Cancer. But, as Dr. Cooke observes, "It is not constant, or the patient could not live, but comes on at uncertain intervals, and is so startling and severe that it makes the sufferer jump from her chair or couch, not infrequently with a sharp cry of anguish." Could but our patients speak, they might tell us something of the pain in Bursatti! Their manners, however, too often indicate the nature of their suffering. The manifestations of pain now and then evinced are such as to awaken in our minds a deep sympathy for our dumb four-footed friends, who, denied by nature the gift of speech, have yet such delicate ways of making known their complaints, as to rival the more luminous medium of words.

(*To be continued.*)

* Epithelioma: "Pathology and Morbid Anatomy," p. 93.
† "Pathological Anatomy," by Wilx and Moxon, 2nd Ed., p. 656.
‡ *Veterinarian*, 1873, p. 18.

Editorial.

THE INSPECTION OF MEAT.

Among the sanitary necessities which our civilisation entails, the inspection of the flesh of animals intended for the food of mankind should take a foremost place; indeed, it has long been recognised in other European countries than our own that healthy meat is of the first importance in regard to the public health, and, acting upon this belief, legislative measures have been framed and rigidly enforced, and efficient precautions adopted in the form of public abattoirs—where animals could be examined by competent men before slaughter, and their carcases after—and inspections of butchers' stalls adopted. In this country we are far behind the Continental Governments in everything pertaining to the protection of the public from the issue of diseased or improper meat. There are, it may be said, no public slaughter-houses where the healthiness of the animals killed in them is duly certified to; the few there are being under no supervision in this respect, as they have been erected solely with the object of convenience in slaughtering and the issue of the carcases to local butchers' shops. We can testify, by what we have witnessed in the Edinburgh abattoir (where we have seen carcases dressed for issue to butchers, affected with generalised Tuberculosis, large internal abscesses, etc.), that the sound or unsound condition of the flesh of the creatures killed in them is not a matter for consideration. And if it be so in these public establishments, we may rest assured that those horrid abominations, the private slaughter-houses, are no better, but perhaps worse; as, while decency might impose some check upon the admission of animals showing external indications of serious disease to the public abattoirs, there is no such restraint operating in the case of the private butchery, to which anything in the form of a living ox, sheep, or pig may be introduced, and from which anything in the shape of a carcase—dressed, carved, washed, and powdered, to mask traces of disease—may be issued.

Again, with regard to diseased animals which died or were killed to prevent their dying naturally, either in dairies or on farms, we may ask what becomes of their flesh. We are inclined to believe that few of them are buried, and, from inquiries made at many knackeries, it is only too probable that yet fewer find their way there. The presumption is therefore strong that they are bought by a low class of dealer or butcher for a small sum, dressed, and sent to market as food for poor people.

That all this traffic in diseased or bad meat can be carried on with impunity is a fact patent to all who have any acquaintance with the meat trade, or who, like veterinary surgeons, are acquainted with the ultimate destination of disease-stricken cattle, sheep, or pigs. Meat inspection there may be, but it can scarcely be called anything more than a farce or a sham. The inspectors have had no particular training, and generally manifest no special aptitude for their work, being either medical men, broken-down policemen, bankrupt butchers, or men of any other calling, who cannot, as a rule, know anything of diseased flesh, and may not

even be able to tell when it is putrid—as was shown in a trial in one of the London police-courts recently, when one medical gentleman swore that a quantity of meat was putrid, while another took his oath that it was perfectly fresh.

The consequence is, as might be expected, that diseased flesh is rarely detected either in the slaughter-house or on the meat-stall, while it not unfrequently happens that gross mistakes are made, and innocent people convicted, through the incapacity of the inspectors. It is evident that meat inspectors should be competent persons, not only able to pronounce whether flesh is putrid or fresh, diseased or healthy, good or bad, but also the kind of animal it may have been derived from, the condition it may have been in before it was slaughtered, whether it had been treated with drugs for some disease, and the probable disease with which it was affected. He should also be a good comparative pathologist, well acquainted with morbid anatomy and animal entozoa, and well instructed in the use of the microscope.

Some discussion has arisen lately in the medical journals as to whether medical men or veterinary surgeons are best fitted for the duties of meat inspectors, and, as might have been expected, the former consider themselves best qualified, though on what grounds they do not venture to enlighten us. But it certainly cannot be allowed that they possess any special qualifications from the training they may have received while studying medicine, and subsequently practising medicine or surgery among their own species cannot have endowed them with that particular knowledge which a meat inspector should have. Their pretensions cannot, therefore, be said to be well-established, and especially are they inadmissible when we know—what many of them are ready to confess—that their ignorance of animal diseases is so great as to be almost proverbial.

This is so well recognised on the Continent, that medical men are never employed on this duty, nor are their opinions sought when any questions arise as to the issue of certain flesh for food. All meat and abattoir inspection is entrusted to veterinary surgeons, whose special training and knowledge render them by far the most suitable persons to undertake such a difficult and responsible duty; and, as is well known, it is veterinarians who have made this subject particularly their own by their investigations into the diseases of animals which render the flesh or milk of these dangerous to mankind. In this direction the names of Gerlach, Haubner, Semmer, Bouley, Chauveau, Leisering, Toussaint, and a host of other members of the veterinary profession, will occur to the minds of our readers.

What this country urgently requires are public abattoirs in every town and city, with well-trained veterinarians to preside over them, so as to guarantee the public against the dangers arising from unsound flesh; as well as veterinary inspectors to ensure purchasers of meat that that which they buy in the shops, and which may have found its way there from other sources than the abattoirs, is suitable for human consumption.

BURSÆ MUCOSÆ.

BY PROFESSOR F. EICHBAUM, OF GIESSEN.

(*Continued from page* 36.)

Before we speak upon the methods applied in these researches, we may remark that we can absolutely confirm Tillmanns'* views respecting the use of nitrate of silver, viz., that this reagent alone is not sufficient to demonstrate positively the presence or absence of an endothelial layer on the membranes under our consideration. The reagent is undoubtedly of great value in studying the serous membranes and the interior of vessels. However, with synovial membranes it gives the most intricate results; which, according to Schweigger-Seidal and Tillmanns, is produced by the union of the silver with the albumen of the tissue, forming a layer of albuminate of silver (Silberalbuminathäutchen). The fact that these membranes are covered with synovia, the superficial tissues become soaked with it, which makes it difficult to remove; even the most careful washing does not completely prevent this layer (skin) forming when the silver solution is added to the preparation. This undoubtedly is the cause of the divergent views respecting this question. Although bursæ mucosæ and tender sheaths only contain a small quantity of synovia under normal conditions, still it seems to be sufficient to produce this artificial layer or skin, which Tillmanns, in his work upon the "Uncertainty of the Silver Method of Studying the Histology of Joints," has so strikingly pointed out.

When specimens are successfully prepared we find—as I have shown more closely below—clear spaces bounded by delicate brown or black lines, and in their centre is a large round nucleus, so that these structures are scarcely distinguishable from the endothelium of other serous membranes. When the synovia is not sufficiently removed from the membrane, these boundary lines appear broader and more extended. They widen at the expense of the clear spaces, and finally these spaces and the whole cellular arrangement of the specimen become a uniform brown colour; and if hæmatoxylin be added to the preparation, the dark nuclei may be seen, if the silver-synovial membrane or albuminate of silver skin is not too thick. It not unfrequently happens that this appearance is mixed, and assumes a striped form in the same preparation, *e.g.*, stripes of various widths, when distinct silver boundaries may be seen; then a brown-coloured one, where the silver has mingled with the albumen, and then the so-called keratoid appearance. Such specimens are undoubtedly due to the tissue getting into folds during its preparation, and the silver solution settling in the deeper parts, and as a consequence, staining them more deeply. In other cases this silver-albuminate covering or skin is not so complete; it may appear in spots only, with undefined borders, in which case they resemble nuclei, or it may resemble keratoid tissue having irregular stellate spaces united by projections. If this silver albuminate covering is removed by mechanical or chemical means, the normal structure of the tissue beneath becomes visible. We may remark here that this covering disappears if the preparation is simply allowed to stand for a time in a dark place. Besides these we may often find similar formations to those described by Tillmanns (l.c., Fig. 14) in the subendothelial lymph vessels, and it is probable that this additional brown colour is due to the lymphatic vessels or the endothelial cells absorbing the silver solution.

Although we came to these conclusions with regard to the use of silver nitrate in studying these structures, still I could not absolutely agree with Tillmanns' views, because it occurred to me that it was necessary to try some other staining reagent in conjunction with it. Therefore I tried staining the

* Virchow's Archiv, Band 67, s. 398.

nuclei of specimens already treated with nitrate of silver; and also hardening the membranes in alcohol, and then applying chloride of gold and osmic acid. The course adopted was as follows: The membranes in question were taken from fresh subjects—sometimes immediately after death. Most of them were placed in a solution of bichromate of potash, and then in alcohol, until they were hard enough to be cut; others, after Ranvier's* method, were carefully removed from the body and stretched over a piece of cork, washed, and rinsed in distilled water, and then treated with a ½-per-cent. solution of $AgNO_3$, which after 1½ to 2 minutes was again removed. This method, however, has the disadvantage of splitting the superficial layer of the membrane (which is impregnated with the silver solution) when removing the tissue from the cork; therefore the silver solution was applied to the tissue whilst *in situ*. The bursæ or tendon sheaths, when first opened, were carefully washed out with distilled water, and then treated with the silver solution; and when the surface was equally coloured brown, the bursa was taken out with its attached fascia tendon or muscle, etc., and placed in absolute alcohol and put in a dark place. After it had hardened, it could then be easily prepared for examination by colouring it with hæmatoxylin, and placing it in glycerine without breaking the continuity of its superficial surface. If the layer of albuminate of silver formed, the preparation was opaque, and its structure made out with difficulty, or concealed altogether. It was then treated as Tillmanns suggests (l.c., s. 407), with a concentrated solution of hyposulphate of soda, which causes this covering to disappear in about forty to forty-five minutes; the normal structure of the preparation can then be clearly studied. This method has proved itself to be so successful, that I have only resorted to gold chloride as advised by Soubbotine (l.c., s. 542) or a ½-per-cent. solution of osmic acid in order to ratify the conclusions obtained by nitrate of silver and hæmatoxylin. None but quite fresh specimens are of any value when studying the structures in question—only those that have been taken from the body forty-eight, or at most sixty, hours after death will give the results detailed below—especially with regard to the endothelial lining—which is completely removed by maceration, and only partially present when the tissue is prepared after the time specified.

The tendon-sheaths were the structures first examined in these researches, because their organisation is completed early in fœtal life. Those of the extensor and flexor tendons of the extremities were chosen, because they possess a broad vascular mesotenon, and their walls are usually easily separated from the surrounding retinaculum, thus leaving only the special tissue remaining for inspection.

Longitudinal and transverse sections of the sheath of the extensor pedis presented an outer layer—varying in thickness—composed of firm, rigid, interlacing fibrous tissue, resembling a transverse section of retinaculum. The internal surface of this layer is united to the mucous layer (synovialis or synovial intima) sometimes without any sharp line of demarkation; at others, they are joined by a loose, formless, connective tissue, varying in thickness from 0·20-0·4 mm. in different places, and supporting the larger branches of blood-vessels; it also passes up between the two synovial layers forming the mesotenon, and unites them together (subsynovial layer). This, as well as the synovial intima, are formed by bundles of fibrous tissue intertwined irregularly together in a similar manner to the outer layer. Towards the internal part of the synovial intima—which is frequently in longitudinal folds—the separate bundles of fibrous tissue pass into a delicate, fibrous, closely constructed stratum, interweaved with a network of fine, wavy, elastic fibres; it also supports the smaller branches of blood and

* "Technisches Lehrbuch der Histologie, uberartzt von Nicati und Wyss" (s. 352).

lymph-vessels. The blood-vessels vary in size from 0·024-0·14 mm., and their course and divisions are most easily seen in surface (horizontal) sections. They ramify in the form of a large-meshed network in the most superficial layer of the synovial intima, immediately under the endothelial layer; in an analogous manner—as Tillmanns' researches have shown—to those in serous membranes, *i.e.*, they are always situated above the lymph-vessels, and give off branches into the papillæ, which can usually be traced to their extreme end. In sections which have been cut obliquely to the surface, and stained with carmine, a tolerably regular layer of round granular nuclei from 0·006-0·009 mm. can be detected on the internal surface of the last-mentioned stratum, which under similar circumstances can also be seen on that portion of the intima covering the tendon. This signifies the endothelial layer on the internal surface.

In order to study the endothelial layer, surface (horizontal) sections should be made and treated by one of the above methods before being examined. If a thin section of the mesotenon or wall of a sheath be stained with hæmatoxylin, a layer of round or oval granular nuclei are easily seen on the surface of a fibrillated connective tissue. These are distinguishable from the nuclei mentioned above by their form and arrangement. Such preparations offer a very similar picture to the mesentery of a young animal or an advanced embryo when treated with the same colouring agent; except that, in this case, the underlying fibrous strata contain more cells and nuclei. When these sheaths are more closely studied, it will be seen that the vessels lie beneath these round nuclei. The preparations are still more instructive if they are first treated with a ½-per-cent. solution of silver nitrate, and then stained with hæmatoxylin. In fortunate specimens prepared in this way, we find a fine brown or black network (silver line) surrounding irregular polygonal or circular-shaped spaces—or rather separating these from each other. They vary in size: their longitudinal diameter being usually between 0·015-0·018 mm., and the width from 0·006-0·015 mm. In each we find a relatively large round or oval, very granular nucleus from 0·006-0·009 mm. in diameter, containing several nucleoli. The spaces which are mapped out by these lines undoubtedly correspond to the endothelial cells, which form a continuous covering on the internal surface of the synovial intima and the surface of the tendon.

If these cells are compared with those of serous membranes, especially those on the peritoneum of horses, we find they resemble each other in size (length 0·024, breadth 0·018 mm.), although the dark boundary lines on the peritoneum appear to be more unequally undulating or wavy. This is caused, as we have already seen, by the albuminate precipitate being more extensive on the synovial membranes, and this appearance is most strikingly seen on the periphery and deeper-lying parts of the endothelium. This silver line may often be as delicate in tendon sheaths and subtendinous mucous bursæ as in serous membranes, although the contrary is the rule. Further, where two lines meet, we often find they appear thickened: this is due to the cells pressing against or overlapping each other, which produces an irregularity in the width of the dark lines. When these lines are regular, the cells are more or less circular, and the peripheral brown part of the cells are in the form of rings surrounding clear spaces, each containing a nucleus in its centre. In other specimens we may find these appearances mixed. If, however, the preparation is treated with hyposulphate of soda, the albuminate of silver covering is removed, and allows the regularly arranged, blue-coloured nuclei to come into view.

The proof of the existence of a cellular endothelial layer is demonstrated by the regularity of the nuclei, and by the fact that the above-mentioned network of dark lines, with the nuclei within them, is easily removed by

mechanical means. If a first preparation, or, better still, one that has been lying in glycerine for twenty-four hours, be brushed over with a pencil, this cellular covering is easily removed, and if such a preparation be examined microscopically, it will be found that, in some places, it has lost this cellular covering, whilst at others it is left intact, or raised up and displaced. Again, it is not difficult to obtain this layer for examination by scraping the internal surface of the synovial intima. In such preparations one often sees isolated endothelial cells and fat. The former are flattened, round, or oval-shaped cells, which sometimes have irregular indented processes, and their large nuclei surrounded by a small mantle of protoplasm. The latter presents a transparent finely granulated ground substance, with nuclei—similar to those described — evenly distributed amongst it. Similar results are obtained by subjecting the synovial intima to gold chloride. The surface of such preparations presents a layer of round or oval cells, with sharply defined contours and large violet nuclei. The cells lie close together, and sometimes their edges overlap each other, which gives the appearance of a covering composed of more than one layer of cells. The gold chloride more particularly demonstrates the presence of the vessels under the endothelium; I have never found them between the endothelial cells, or naked on the surface of the synovial membrane.

The endothelium lining the sheaths of tendons is never composed of more than a single layer of cells, and we may anticipate the same is the case in mucous bursæ. They are also found covering the papillæ, which are thread-like, often branched processes, from the synovial intima; they present great variations in presence, form, and arrangement. They are found on the walls as well as the mesotenon; sometimes isolated, at others in groups. They usually arise from a small fold of the synovialis by a broad base, then alternately broader, or become smaller in their course, and frequently terminate with a club-shaped extremity. Further, a single papilla may frequently be observed branched out into a number of clubs or egg-shaped divisions, joined together at a common axis, and these may send out similar shaped processes from their lateral surfaces. These daughter or secondary papillæ probably arise from a puckering of the endothelium, which afterwards develops into a side branch. The length of a single papilla varies from 0·20-3·00 mm., and their diameter between 0·06-0·24 mm.

When more closely examined, we find a number of nuclei on their surface, situated at tolerably even distances from each other, bordered by a silver line. If macerated in a weak (2-3 p. mll.) solution of chromate of potash and shaken in a bottle of fluid, or pencilled, this cell-covering is removed, and the processes remain in contact with the synovial intima; they may, however, be distinguished from the intima by the delicacy of the fibres composing them, as well as the presence of a finely nucleated substance between them, especially in their club-shaped ends. No difference can be recognised between the endothelium covering these papillæ and that on other parts of the tissue, although it is noteworthy that on several places of the papillæ the endothelium is wanting; this defect is probably the result of its preparation (maceration).

We will now give a short *résumé* of the results of our examination of the bursa under the peroneus muscle. The wall is composed of white and elastic connective-tissue fibres, lined on the inside by endothelial cells, which extend on both sides of the mesotenon, and passes from here to the surface of the tendon itself.

The sheath, therefore, is a closed sac with parietal and visceral layers continuous with each other. The same is the case with most of the tendon sheaths found in the body, *e.g.*, in the sheaths of the extensor metacarpus obliquus, flexors of the metacarpus, the perforans and perforatus at the

back of the carpus, and on the sheaths of the extensors pedis, os suffragius, as well as the flexor pedis accessorius of the hind limb. On the other hand, there are other sheaths where the endothelial lining is not continuous, viz.: when cartilage is inserted in the centre of the sheath, *e.g.*, the sheath of the perforans at the posterior part of the fetlock joint, which has its anterior wall lined by a synovial membrane for about 10 ctm. above the fetlock joint, passes downwards over the posterior part of the suspensory ligament, the sesamoid bones, the inferior sesamoid ligaments, and the joint capsule. The posterior wall is formed by the anterior surface of the perforatus, on whose lateral borders the synovial sheath is inserted, except where it passes the sesamoid bones. At this part the synovial sheath passes from the lateral borders of the sesamoid bones to the posterior surface of the perforatus tendon, so that it overlaps its borders and forms two lateral blind sacs, which come together at the centre of the back part of the tendon, and is called the bursa vaginalis of the perforatus tendon. It is also important to notice that at about the superior half of the sesamoid bones the perforatus gives off a flat tendinous process, which passes like a ring round the perforans, and that the synovial intima also here forms two diverticles, first by that portion of the membrane covering the suspensory ligament sending out a process to the above-mentioned circular band, and, secondly, by its reflection from this on to the perforans tendon.

Microscopically, we find this bursa vaginalis of the perforatus to possess an endothelial lining at all parts. At the lateral borders of the sesamoid bones, however, when this membrane passes into the anterior wall of the sheath through which the perforans passes, we find the endothelium disappears, and a zone about 0·75 mm. broad, which, if treated with nitrate of silver, presents superficially a homogeneous—deeper, a fibrous—appearance; a ground substance of a brown colour, and tolerably closely-packed clear spaces of various sizes and shapes; some are round, others star-shaped, and as a rule about the size of ordinary endothelium, with fine, long processes which anastomose with similar branches from neighbouring cells, and altogether has the appearance of keratoid tissue. Between the spaces, islands of regular endothelium may be seen. If such a specimen be coloured with hæmatoxylin, each space will be found to contain an oblong—sometimes an elongated spindle-shaped dark blue nucleus, having a diameter of 0·008 mm. In a smaller zone the spaces are fewer in number, mostly in groups of two and four, and they present the same irregular shape and branched appearance. Hæmatoxylin also brings out the nuclei in them. This zone passes into the former without any marked boundary line. Similar clear oval spaces are also found, as in the above-mentioned zone; they are sometimes irregularly distributed, at others arranged in rows; their long diameter is 0·012-0·015 mm., and mostly contain large oval nuclei, 0·009 mm. The body of the cell is homogeneous and transparent, and the distance from one cell to another is very variable. Two cells may frequently be found lying close together, and where they touch, their walls are flattened and often appear to be enclosed in the same capsule. If the silver layer is removed from the last-mentioned zone by hyposulphate of soda, the structure that remains is similar to that described above. The cells mostly lie between, but some are on the fibrous basement membrane, and differ from the endothelial cells by the fact that the latter, if not treated with a solution of silver, present no definite boundary lines, but look like a continuous, granular layer, in which nuclei are visible; whereas the former have a transparent protoplasm with sharply-defined dark contours. This last-described zone is indistinguishable from connective-tissue cartilage, and no doubt the cells are cartilage cells.

(To be continued).

THE VETERINARY MUTUAL DEFENCE FUND.

DECEMBER 31ST, 1884. NINE MONTHS.

1884.	£	s.	d.
Balance in hand, March 11th, 1884..	1	15	6
,, bank ,, ,, ,,..	230	11	2
December 31, Amount of Subscription since March 11th, 1884 ..	41	0	3½
Bank Interest, June 23rd, 1884 ..	1	8	8
Bank Interest, December 24th, 1884	1	15	9
	£276	10	11½

1884.	£	s.	d.
July 28th, Dr. Matherson in Settlement of Claim against Mr. James Rowe (£5 of this advanced by Mr. Rowe, July 18th)	7	0	0
November 14th, Mr. J. L. Barling towards cost of trial	50	0	0
Wrappers for Circulars, etc. ..	0	5	8½
Stamps, Stationery, etc.	0	10	0
Secretary's Expenses	1	10	1
December 31st, Cash in Bank ..	198	9	9
Cash in hand	18	15	5
	£276	10	11½

Audited and found correct, JOHN B. WOLSTENHOLME.

January 14th, 1885. THOMAS GREAVES, *Hon. Treasurer.*

THE NATIONAL VETERINARY BENEVOLENT FUND.

DECEMBER 31ST, 1884. NINE MONTHS.

1884.	£	s.	d.
Balance in Bank, March 11th, 1884	52	14	8
December 31st, Mersey Dock Bonds	1900	0	0
Subscriptions since March 11th to December 31st, 1884	3	6	2½
Bank Interest, June 24th, 1884 ..	0	8	5
Bank Interest, December 24th, 1884	1	0	0
Dividend on £600 at 3¼, March 11th, 1884	11	7	8
Miss Dick's Bequest, less tax ..	92	18	2
Dividend on £1302 at 4, and £660 at 3⅞	36	16	10
	£2098	11	11½

1884.	£	s.	d.
June 14th, Brown's orphans ..	10	0	0
June 16th, Mrs. Alfred Rushall and Family	5	0	0
September 20th, Mrs. S. F. Falding and Family	5	0	0
October 20th, Mrs. Alfred Rushall..	5	0	0
November 14th, Mrs. A. Rushall..	5	0	0
December 31st, Overpaid into Bank last settlement	3	6	2½
Cash in Mersey Docks	1900	0	0
Cash in Bank	165	5	9
	£2098	11	11½

Audited and found correct, JOHN B. WOLSTENHOLME.

January 14th, 1885. THOMAS GREAVES, *Hon. Treasurer.*

NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE FUNDS.

List of Subscriptions from March 9th, 1884, to December 31st, 1884.

1884.			£	s.	d.
March 27	Mr.	T. Secker.....	0	10	6
,, 28	,,	T. Walley ...	1	1	0
April 3	,,	F. H. Riddler	1	1	0
,, 3	,,	T. D. Dollar	1	1	0
,, 5	,,	E. Hodgkinson	0	10	6
,, 5	,,	J. Lawson ...	1	1	0
,, 5	,,	A. Lawson ...	1	1	0
,, 5	,,	J. M. Broad...	4	4	0
,, 5	,,	G. A. Banham	1	1	0
,, 5	,,	M. J. Roberts	1	1	0
,, 7	,,	G. H. Darwell	1	1	0
,, 7	,,	J. L. Barling	0	10	6
,, 8	,,	J. M. Axe ...	0	10	6
,, 10	,,	T. Hopkins...	1	1	0
,, 13	,,	W. Dobie ...	1	0	0
,, 14	,,	A L. Gibson	1	1	0
,, 14	,,	M. Hack.....	2	2	0
,, 16	,,	Wm. Woods..	0	10	6
,, 18	Messrs.	J. Leather and Son ...	2	2	0
June 23	,,	G. Ball and son	2	2	0

1884.			£	s.	d.
June 30	Mr.	Thos. Proctor	1	1	0
July 10	Executors of the late Miss Dick, Bequest, less tax		92	18	2
,, 18	Mr.	J. Rowe, on account of defence.....	5	0	0
,, 24	Messrs.	Storey and Son	1	1	0
,, 31	Mr.	J. Mackinder	2	2	0
Aug. 21	,,	G. H. Thornley.....	1	1	0
,, 21	,,	H. Ferguson	1	1	0
,, 21	,,	J. Martin.....	1	1	0
Nov. 14	,,	Wm. Dacre...	3	3	0
Dec. 30	,,	G. Morgan ...	1	1	0
,, 30	Professor	Axe	1	1	0
,, 31	Mr.	F. Dun	2	2	0
			£137	4	8

THE FITZWYGRAM PRIZES.

WE are asked to notify that the competition for the above prizes will take place on May 12th at the Highland and Agricultural Society's rooms, Edinburgh, on the terms of previous competitions noticed in this Journal. The Principals of Colleges are requested to forward the names of candidates to the Secretary, R.C.V.S., not later than May 7th.

ANTHRAX IN INDIA.*

SIR,—In compliance with instructions from the Adjutant-General in India, forwarded under cover of your memorandum, I have the honour to report that on reaching Lucknow (28th July), I communicated with the General Officer commanding the Oudh Division, the Officer commanding, and the Officer in veterinary charge of the horses, 17th (D.C.O.) Lancers.

2. On the following morning I inspected the healthy horses, their stables, outer lines, and all surroundings; then the various camps of healthy, suspected, and convalescent horses and grass-cutters' ponies, which were segregated, or isolated, in well-selected situations, the present one forming the 2nd camp.

The horses under treatment for ordinary affections and the infirmary were inspected last.

3. *History, Past.*—Lucknow is an anthracoid centre, Anthrax occurring and recurring periodically—generally during the hotter months—to a variable extent, assuming more often the sporadic and enzootic than the epizootic character, amongst the horses of the British and Native Cavalry, Royal Artillery, and private owners among grass-cutters' ponies.

4. Documents in this office furnish the following statistics in European mounted corps, from 1879, in Lucknow :—

	DIED.	RECOVERED.	YEAR.	CAVALRY.	R.H.A.	R.A.
ANTHRAX.	4	2	1879	—	—	6
	9	10	1880	18	—	1
	1	—	1881	1	—	—
	2	—	1882	2	—	—
	1	—	1883	1	—	—
	17	12		22	—	7

No cases of Anthrax, *alias* Malignant Fever and Loodiana Disease, stand on record in the Lower Circle previous to July, 1877, which, however, is no proof of its non-existence. Long before this it was recognised in the Upper Circle; but non-recognised and unrecorded outbreaks must have occurred in the Lower one in preceding times.

5. *History, Present.*—The first case of this outbreak declared itself in horse No. 43, A troop, 17th Lancers, which had been standing in the

* A Report from Acting Inspecting Veterinary Surgeon Poyser to the Principal Veterinary Surgeon in India, dated August 26, 1884.

infirmary, and living on a bran diet, since 18th May, and was under treatment for a bursattic wound at an angle of the mouth.

He died, violently affected, four hours after the attack was observed, on 23rd June.

Period of incubation, source of cause, and mode of access unknown.

6. Awaiting the veterinary surgeon's return from duty at Fyzabad, the carcase remained 17 or 18 hours uncremated—an unfortunate occurrence, though under the circumstances (absence of professional advice) perhaps unavoidable. Immediate cremation would have destroyed a centre of infection which in hot weather may be rapidly spread by flies and other agencies.

7. Neither horse A 28—sharing the same box, and subjected apparently to similar, if not the same, influences—nor any other horse of A or any other troop in the infirmary became affected, nor did the disease show itself in the grass-cutters' ponies of that troop.

This sporadic case began and closed the first phase.

The usual precautions were taken, and danger seemed over.

8. But 14 days later, on 6th July, a horse of the 4th troop, 2nd Bengal Cavalry, died of Anthrax, 7 hours after observed attack.

9. At 9 a.m. Sowar Goolam Nubbee, acting salootri, 2nd B.C., whilst conducting the *post-mortem*, scratched the back of his left fore-arm on a jagged rib, and became accidentally inoculated.

On the 8th July, about 48 hours after inoculation, he felt a "burning, tingling pain round about the wound, and experienced a feeling of stiffness in his limbs."

9th July.—Dr. Parsons declared him the subject of Malignant Pustule, contracted by inoculation from the horse's anthracoid carcase.

Malignant Pustule in man is synonymous with animal Anthrax.

A record of the case (marked "A") is attached. Period of incubation under 48 hours.

The disease began to wane about the seventh day. On the 30th July I visited the patient, who was walking about, and approaching convalescence.

This case is warningly interesting, affording another proof of the ready transmissibility of Anthrax from animals to man. It is evidence which cannot be too widely promulgated.

10. Three natives were imprisoned for stealing the flesh of the carcase—for eating purposes—whilst in the cinerator.

11. On the 12th July, B troop, 17th Lancers—the farthest removed range but one from the regimental infirmary and the 2nd Bombay Cavalry lines—declared itself infected, four of five attacked dying this day.

Two attacked on 13th recovered; one on 14th died; also an F troop grass-cutter's pony, on return from the jungle; a B troop grass-cutter's pony recovered, and a horse of 2nd Bengal Cavalry (2nd troop) died.

On 15th a B troop attack recovered, and a pony belonging to the sergeant-major of D troop died.

The latter stood at the eastern end of D troop range, which is next to that of B, *vide* plan.

On 17th	...	2 attacks	...	Recovered.			
„ 18th	...	2 „	...	1 „		1 died.	
„ 19th	...	3 „	...	1 „		2 „	

And also a grass-cutter's pony of D/4, R.A., after return from jungle.

On 20th	...	1 attack	...	...	...	died.
„ 26th	...	1 „	...	...	...	„

Here ended the outbreak in the 17th Lancers, but a report has reached me that a horse of the 5th troop, 2nd Bengal Cavalry, died on 3rd August, and a yaboo (a grass-carrying animal), the property of the same sowar, died on the 4th August, 1884.

12. A copy of the register of sick horses is appended :—

Troop.	Regimental No.	Colour.	Sex.	Caste.	Age.	Disease.	Date of Admission.	Date of Discharge.	Remarks.
A	43	B	G	W	13	Anthrax	June 23	June 23	Died.
B	31	Ch	M	S	14	,,	July 12	July 13	Died.
B	62	B	M	W	9	,,	,, 12	,, 17	Died.
B	17	B	M	W	8	,,	,, 12	,, 13	Died.
B	59	B	G	C	7	,,	,, 12	,, 18	Died.
B	3	Ch	M	S	14	,,	,, 12		Recovered.
B	66	D	M	S	12	,,	,, 13		Recovered.
B	50	B	M	S	14	,,	,, 13		Recovered.
B	53	B	M	W	15	,,	,, 14	,, 16	Died.
B	24	B	G	W	13	,,	,, 15		Recovered.
B	26	B	G	C	10	,,	,, 17		Recovered.
B	43	B	M	S	12	,,	,, 17		Recovered.
B	49	B	M	C	8	,,	,, 18		Recovered.
B	4	G	G	S	13	,,	,, 18	,, 21	Died.
B	51	B	M	W	9	,,	,, 19		Recovered.
B	10	B	M	W	6	,,	,, 19	,, 23	Died.
B	47	B	G	C	9	,,	,, 19	,, 21	Died.
B	45	B	G	W	9	,,	,, 20	,, 21	Died.
B	42	B	M	W	9	,,	,, 26	,, 26	Died.

13. *Inspection.*—On inspecting the horses of the 17th Lancers, I could detect no individual or personal causes which observers have classed as predisposing to Anthrax ; they were notably absent, though, generally speaking, the horses were in good order, and, for the time of the year, with some exceptions, fresh enough.

Youth, as a predisposing cause, did not exist, all the attacked having reached maturity ; the average age of deaths being $10\frac{2}{19}$ years ; of recoveries, $10\frac{3}{4}$; youngest 6, oldest 15. There can be but few below 6 and above 15 in the regiment. *Vide* table below :—

Ages, etc.	Attacked.	Died.	Recovered.	Remarks.
6	1	1	—	
7	1	1	—	
8	2	1	1	
9	5	4	1	
10	1	—	1	
12	2	—	2	
13	3	2	1	
14	3	1	2	
15	1	1	—	
	19	11	8	
Geldings	7	5	2	
Mares.....	12	6	6	
	19	11	8	

The condition of the recovering horses was fairly good on 29th July.

14. The grain feeding had been, too, what observers have regarded as inimical to the acquirement of plethoric, or even thriving, conditions—viz., ½ bran, ½ grain, the quality of that inspected being good and satisfactory.

15. Excepting that the grain was insufficiently crushed, the entire preparation was correct.

16. The grass, since the rainfall, has been good and plentiful; previously it had been scarce and inferior, and was supplemented with a small allowance of bhoosa.

17. Although a thriving condition, resulting from a highly nutritious grain diet, unchecked by adequate exercise and other health-inducing influences, is regarded as conducive to the rapid development of Anthrax after infection, and though thermal, telluric, atmospheric, and meteorological conditions are said to play very important parts as predisposing factors, and which are probably more intimately associated with the life-history of the cause than of its hosts—all these conditions, unintelligible as some of them are, are decidedly subservient to the inception of the bacillus anthracis, the living parasite whose habitat we are so anxious to be able to recognise.

18. I mention this to show that the disease is not a mere question of bad feeding or bad sanitation; but such conditions are highly calculated to seriously enhance the influence of predisposing agents, and should, therefore, receive the greatest possible attention and the most constant supervision by every one concerned.

19. Some of the climatic conditions just considered existed previous to the first appearance of the disease on the 23rd June, when the monsoon broke.

Rain also fell three or four days previous to the second appearance on 12th July.

20. The water and watering arrangements were satisfactory in all respects, the well's water being found physically good, sweet, clear, and potable.*

21. On the 26th May the veterinary surgeon in charge had good occasion to point out the evil results which were likely to accrue to the 17th Lancers' horses by watering in the Goomtee stream—a course adopted during very dry weather and great scarcity of well water. (*Vide* his No. 69 D, Lucknow, 26th May, 1884, marked "C.")

22. I can adduce no reason to trace any connection between this system of watering and the appearance of Anthrax on 23rd June, or later.

23. With the stable management generally I was satisfied. The sanitary conditions of the stables and surroundings were very good.

24. The outer standings are in a bad state for want of repair; some were dug up for examination, and found comparatively clean.

25. The inter-rangal spaces used as outer standings are too small and confined for the number of horses in occupation. Each half-troop there has a useless head-wall, which should be cleared away, as being most obstructive to ground ventilation.

26. Nothing should remain above the surface except the low manger-walls, and a small 12-inches high support for the water-basins.

27. I would recommend that only half the number of horses occupy the inter-rangal areas; or, better, that they be entirely cleared and abandoned, provided there be room, and no objections to constructing plain outer raised lines, without walls, along the flanks of the ranges, to run north and south.

28. From an examination of B troop flooring, now in process of excavation and removal, I could detect nothing even of an unsanitary nature, and certainly nothing could be declared to be disease-producing.

*Other troops, which remained unaffected, had been watered at the same well as the affected one.

29. Excepting those of B and D troops, all the kunkur floors had been recently replaced by a 3-inch substratum of rammed broken brick, overlaid by 3-inch solid bricks, surfaced by six inches of ordinary earth.

No cases occurred during these excavations, which, for financial reasons, were not extended to B and D troops.

30. It was only after the outbreak and abandonment of these ranges that the original intention of completing the re-flooring was resumed.

31. Whilst there is no direct evidence to warrant my imputing blame to the state or material of the floorings as factors or co-factors in the development and evolution of this outbreak, there are, of course, very cogent reasons why those floors upon which infected subjects have stood, died, or recovered should be removed and thoroughly disinfected, to obviate the formation of new infective centres, and it is frequently advisable to extend such operations farther.

32. The fouled kunkur and earth of stable floors is not unfrequently utilised on adjacent roads and about barracks—a course which the sanitist would consider prejudicial to health and life, but which the economist would regard as a saving of material and labour.

33. It is here worthy of remark that, whilst Government sanctions labour, appliances, and material for the demolition and reconstruction of floors under *roofed* stables, regimental labour is taxed to remove and repair the uncovered standings, which may be just as much infected.

34. The consequence is that these latter positions are neglected, regimental labour and appliances being inadequate for the work.

35. On this showing, the question naturally arises, What is the use of removing one and not the other set of floors, as a suppressive or preventive measure, when each position is equally occupied?

36. There needs but little reference to the actual cause of Anthrax or to its character or nature. Suffice it to say that it is blood parasitism, due to a living organism, termed bacillus anthracis.

37. But it is with the habitation and source of this agent, with its mode of conveyance and access to the system, that the profession is still concerned.

And until each outbreak can be identified with these phases of causation, or until protective inoculation is made to confer immunity, Anthrax will continue to flourish, though it is in the highest degree possible to check or even prevent it—in a limited sense—by exercising a watchful influence over sanitation in general, and by controlling the other predisposing causes, intrinsic and extrinsic, so far as they are in our power, and which they are, in the matter of food, its source and supply—by feeding on hay not "cheeled," cut above ground, and from uninfected spots. But here, again, is the difficulty —how are these situations to be recognised?

38. Here I would refer to my printed notes on "Anthrax Investigations in Sialkote, in 1883."*

39. It has not yet been explained why one station—such as Meerut—is free from Anthrax; why the mortality is less in Rawal Pindi now than a few years ago; why epizootic in Lucknow this year, sporadic last, and so on. These are the questions still wanting irrefutable answers.

40. They may yet be found intimately connected with the grass and its supply.

41. The more striking features of this outbreak are as follow:—

1st. Its attack in the solitary case, A 43, in the veterinary infirmary, and the non-infection of his close neighbour, A 28.

They were presumably feeding on portions of the same heap of grass, and apparently exposed to the same causes.

If, as I believe, the germs of the disease come in with the earth attached

* *Vide* VETERINARY JOURNAL, vol. xviii., pp. 87, 177, and 258.

to the grass, it is highly probable that A 43 became cutaneously inoculated through the bursattic wound for which he had been under treatment since the 18th May.

2nd. Its sudden cessation with this case.

3rd. Its reappearance in B troop range on 12th July, and the epizootic character it assumed in this troop only—the most remote range but one from the infirmary, and still more remote from the 2nd B.C., where it had shown itself sporadically on the 6th July, there being in this latter case most certainly no other connective medium than that of the veterinary surgeon, who was in charge of both regiments and the Artillery.

4th. Horses No. 59, 17, 62, standing next to each other, 31 (opposite to 59), attacked on the 12th, and died; whilst 6 (neighbour to 59) and 7 (between 62 and 53—a later fatal case) escaped infection.

5th. Attack, and death, on 14th July, of sergeant-major's pony, D troop, standing at the east end of that range, and opposite to that end of B troop worst affected.

6th. The escape of D troop (next to the north) and F troop (next to the south).

42. Most of the cases of B troop manifested themselves after removal into No. 1 camp.

It is not clear, but probable, that all were not infected before leaving the range, unless the period of incubation was of a longer period than is believed to be.

43. The incubative period, however, is doubtless influenced by the amount and condition of the poison incepted, by individual receptivity, and by the manner of inception. Traumatic inoculation would give the shortest period of incubation; inception by respiratory tract perhaps longer; by alimentary tract longest.

44. And it may be that many cases meet with direct inoculation through wounds in the lips, nostrils, mouths, and neighbouring parts, accounting for capital, maxillary, cervical localisation, and so on.

45. The stalls of the other affected horses ranged from end to end and on each side of the building, the most easterly portion of the eastern half on the north side showing the most cases in the smallest compass,

As 4	deaths and	3 recoveries against
2	„	2
1	„	3
3	„	0
10		8

46. I know nothing certain of the source of the cause, of its deportment, or of its access to the system—nothing of the circumstances which have initiated, directed, or arrested the disease in this or other outbreaks; but deductions thereon favour the argument that the poison of Anthrax is not very volatile, and, *per contra*, that it is more fixed in character.

Other authorities in India have advanced no farther.

47. Until something more tangible can be shown, it will be assumed that the living Anthrax germ comes in with the soil attached to the grass forage, and more likely to be brought in by (cheeled) grass cut below than above the ground's surface.

48. In the absence of other theories or facts, the profession has accepted this on the experiments of Pasteur, and bases, so far as it can, its measures of prevention. But under the present constitution of the grass supply neither the profession nor any other authority can have any control over the wanderings of the grass supplier; and, supposing it could, who can tell where to avoid Anthrax?

Though every possible precaution was taken, I observed, for the second time, women cutting grass for the regiment within a few yards of eight recovering cases of Anthrax.

49. Rain invariably precedes an outbreak of Anthrax and arouses the bacillus into activity.

50. Pasteur credits the earthworm (and the white ant may, therefore, be credited) with doing much mischief, by raising, with its upheavals, the spores of the bacillus, for he found the soil above the graves of animals which had died of Anthrax—buried ten or twelve months—literally teeming with the spores.

51. It is noteworthy that Lucknow at this time is covered with these small mounds of the earthworm, but the work of a microscopist—a specialist—is essential for deeper investigation here.

The bacillus was not microscopically discovered by the medical officer in the material supplied by the veterinary surgeon. In the first place, it is not always to be seen; and in the second, the power used, 300 diameters, was insufficient to define the rods and spores.

52. The suppressive and preventive measures were well and strictly carried out by Veterinary Surgeon Matthews; he is inclined to attach value to his treatment of the recoveries with Little's soluble phenyle, which has, however, failed in previous outbreaks under my care.

53. It was represented that the McDougall's disinfecting powder supplied was useless, had been condemned, and that but little of reliable quality was obtainable from the Commissariat Department—to which defect I would invite attention.

54. Veterinary Surgeon Burke, ordered in from Cawnpore, took charge of the Royal Artillery horses (which escaped infection) on 24th July, but was on sick list a week, so that on Mr. Matthews devolved the whole work of two Cavalry regiments, 1 Battery of R.H.A. and 1 R.A., and all their grass-cutters' ponies, as well as that occasionally dropping in from Commissariat and Transport lines.

55. We must summon increased veterinary supervision, if animal diseases are to be reduced to a minimum.

It is only by constant observation by professional officers that such outbreaks can be early recognised and early checked.

56. The work of army veterinary surgeons is directed quite as much towards prevention as cure, but its loses its good influences and value by being over-taxed, yet they are limitless when exercised over manageable charges.

57. I returned to head-quarters on the 3rd August, 1884.

I have, etc., (Signed) RICHARD POYSER,
Officiating I. V. Surgeon, 2nd Circle.

A.

NOTES OF A CASE OF POISONED WOUND (MALIGNANT PUSTULE) UNDER THE TREATMENT OF SURGEON-MAJOR PARSONS, 2ND B.C., LUCKNOW.

Sowar Goolam Nubbee, Mahomedan, age 24, service 4 years, acting as salooti in the horse hospital of the 2nd Bengal Cavalry. There is no entry of admission into hospital in his medical history sheet up to date. He states that all his family have been remarkably healthy. On the 6th July a horse died from Anthrax (Loodiana Fever) at 6 a.m., and at 9 a.m. the patient was performing a *post mortem* on the body of the horse, when he scratched the back of his left fore-arm against the jagged ribs of the horse. He did not take any steps at the time to cleanse or cauterise the wound; when he had

finished the *post-mortem* he only washed his hands and arm in a bucket of water. He took no notice of these scratches, nor did he experience any pain, or anything to draw his attention to them, until the 8th July (almost 48 hours after making the *post-mortem*), and then, he says "he felt a burning, tingling pain round about the wound," and at the same time experienced "a feeling of stiffness of his limbs."

9th July.—He went to hospital, and showed his arm to the hospital-assistant, and said that it was paining him. He was at once taken to Surgeon-Major Parsons. His arm was then swollen, œdematous, and round the wound were four or five little vesicles, with inflamed, indurated bases. There were also several of the same character on the right fore-arm and back of hand. All these vesicles, as well as the wound from the scratches—the point of inoculation—were touched with strong carbolic acid, and carbolic oil dressing applied.

The patient, of his own accord, had taken a dose of sulphate of magnesia.

10th July.—Swelling of the fore-arm has increased, and the patient complains of much pain and increased stiffness of limbs; a yellow fluid discharges from all the pustules, which are surrounded by a red, inflamed base, and containing in the centre a black eschar. He appears now anxious about himself and depressed.

11th July.—Slight fever in the morning, which increased during the day, until his temperature at 6 p.m. was 103·8; tongue coated.

The inflammation round the original wound has increased; bowels acted freely, after a saline aperient; linseed and charcoal poultices to be applied over fore-arm, and to have a sleeping draught at 9 p.m.

12th July.—Slept well during the night, and says "he feels easier"; temperature at 6 a.m., 102; pulse 92; bowels open; tongue white and furred; breath fetid; all the larger pustules crucially incised, and cauterised with strong carbolic acid, followed by carbolised oil dressing; to have quinine, gr. v., acid nit. min. dil. m. × ft. hau. three times a day, and ʒii. brandy; 6 p.m., temperature 98·2.

Sleeping draught to be repeated.

13th July.—Slept well; feels better; temperature normal; skin cool and moist; tongue clean; pulse 91; bowels open freely; pustules and wound in much the same state as yesterday.

14th July.—Appears much better; tongue clean; bowels freely open; breath has lost its fetid odour; no fever; little or no pain, and no stiffness of limbs; pustules less inflamed, and swelling and induration less.

No alteration in treatment.

15th July.—Is much better; pulse 73; temperature 97·6.

16th July.—Improving; is no longer depressed; has a good appetite, and is taking a meat diet.

17th July.—Looks better; there is scarcely any swelling of left fore-arm; the sores left from the pustules are looking healthy, granulating from the edges; there is a hard, indurated ridge round each sore; quinine disulph. gr. ii. p. bis diæ.

18th July.—Doing well; omit brandy.

20th July.—The sore of original wound is looking inflamed and somewhat swollen; no pain; temperature normal; carbolised oil dressing to be replaced by charcoal poultice; other sores to be dressed with zinc lotion, gr. iv., ʒi.

21st July.—Inflammation round sore much less; continue treatment.

22nd July.—The wound appears to have ceased granulating, and a slough is forming round and under the eschar; pain very slight, and feels fairly well; appetite good.

25th July.—Wound is rapidly healing; most of the smaller sores have healed; appetite good, and sleeps well.

30th July.—Going on very well; the eschar over centre of wound has fallen off, leaving underneath a healthy, granulating surface.

C.

COPY OF A LETTER NO. 69D, LUCKNOW, 26TH MAY, 1884. FROM 1ST CLASS V.S. J. MATTHEWS, A.V.D., TO THE O.C. 17TH LANCERS.

In the course of inquiry into the causes giving rise to the serious cases of abdominal disease which have recently occurred in the regiment, two of them terminating fatally, I visited the watering place at the river Goomtee, and am of opinion that the impurity of the water is not only sufficient to account for these cases, but that there is grave reason to fear an outbreak of Anthrax Fever if its use is not discontinued.

2. The current of the stream is very sluggish, shallow in most places, in many absolutely stagnant, and abounding in impurities of a varied nature, comprising those derived from the human body, soiled linen, animal and vegetable matters. I counted nearly fifty natives performing ablutions in the vicinity, and was informed hundreds use it in the course of the day.

3. The horses drank sparingly, some few refusing, though allowed ample opportunity to drink by their riders, and after a long, dusty walk from barracks.

It is also very desirable at this season of the year to avoid exposing the horses unnecessarily to the rays of the noonday sun.

4. I beg to recommend the horses may be watered in the lines, or from a purer source than the present, and, in support of this, to point out the immunity hitherto enjoyed by the horses of the Artillery from diseases of this nature, though under precisely the same system of stable management, stabling, and feeding, but watered frequently in their own lines.

I further beg to inform you of the serious risk that is incurred, by the use of this water, of an outbreak of acute infective disease, chiefly characterised by its rapid development and fatal termination—I mean Anthrax Fever.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD JANUARY 5TH, 1885.

Professor WALLEY, President, in the chair.

Members present:—Professors Axe, Brown, McCall, Pritchard, Robertson, Walley, Williams; Messrs. J. D. Barford, F. Blakeway, B. Cartledge, H. J. Cartwright, J. Cox, E. C. Dray, T. Duguid, T. Greaves, J. Harpley, H. R. Perrins, A. H. Santy, H. L. Simpson, P. Taylor, W. B. Walters, Wm. Whittle, Wm. Woods, F. W. Wragg, and the Secretary.

The minutes of the previous meeting were taken as read and confirmed.

Letters were read from Sir F. Fitzwygram, Dr. G. Fleming, Messrs. Reynolds and Simcocks, regretting their inability to attend the meeting.

Presentations to the Library.

Presentations to the library were announced from Professor MacFadyean of his work on "The Anatomy of the Horse"; a "Calendar for 1884" from

the College of Surgeons of England; and a work by Bracy Clark on "The Foot of the Horse" (donation by Dr. P. Middlemist).

On the motion of Mr. DRAY, seconded by Mr. TAYLOR, the thanks of the Council were given to the donors.

Letters were read from Mr. Broad, of the Central Veterinary Society, thanking the Council for the use of the room; from Messrs. Withers, acknowledging the letter sent by the Council on the death of their father.

An application from Mr. G. Garnett, with reference to the loss of his diploma in the fire at Messrs. Whiteley's, was considered, and proof having been received that the diploma was so destroyed, it was resolved, on the motion of Mr. TAYLOR, seconded by Mr. DRAY, that the usual certificate be given to Mr. Garnett in lieu of the diploma he had lost.

A letter was read from Professor MCCALL, calling attention to the evidence given by Mr. Erskine, a veterinary surgeon, in a case of cruelty to a horse.

Professor MCCALL said he had been requested by the members of the profession in Glasgow to bring the matter to the notice of the Council. He was not prepared to make any motion upon it.

The PRESIDENT said it was a gross kind of thing, but the Council could not interfere.

On the motion of Mr. TAYLOR, seconded by Mr. DRAY, the letter was laid on the table.

Letters were read from Dr. Fleming on the subject of examinations, and were laid on the table.

A letter was read from Mr. Simcocks, withdrawing the motion of which he had given notice until the next meeting of Council.

Election of extra Examiners in Class C.

A letter from the Solicitor to the Council was read.

Professor MCCALL said at a previous meeting of the Council he brought forward a motion to the effect that additional Examiners should be appointed to conduct the Final Examination. That motion came up for discussion, and it was agreed, with only two or three dissentients, that four additional Examiners should be appointed. After that was decided, the names of certain gentlemen were submitted, and four gentlemen, as he believed, were appointed. He was then quite in ignorance that they were proceeding too rapidly, but it appeared that that was the case, and therefore it was necessary *pro forma* to elect those gentlemen over again. He therefore proposed that the additional Examiners should now be elected.

Mr. WHITTLE seconded the motion.

Professor AXE said the whole proceeding appeared to have been based upon a hypothetical assumption on the part of some one that the Examiners could not perform their duties with ease to themselves. At present they had received no communication from the Examiners that they were not able to do the work; it was simply an assumption, and surely on such an assumption they were not going to proceed to elect four additional Examiners.

Mr. TAYLOR submitted that the opinion of the Solicitor should be taken as to whether the Council had power to pass such a resolution. The Examiners were elected in 1882, and he contended the Council had no right to increase the number until 1887. He would propose, as an amendment, that the Council should not proceed to elect additional Examiners.

Professor AXE, in seconding the amendment, said the matter had arisen in this way: a short time ago at one of the examinations a larger number of students than usual were rejected, and upon that certain statements were made and innuendoes thrown out inside and outside teaching schools, which he could not say reflected credit upon either the one or the other. It was assumed that the fault was either with the student or the Examiner, but the

Council should not attach blame to the one or the other, especially in the absence of any evidence that there was any inattention or want of power to examine on the part of the Examining Board. He believed that he was speaking the sentiments of his chief when he said that they were perfectly satisfied with the Examining Board as it was now constituted. He suggested that a committee should be formed for the purpose of considering the whole question, and especially the facilities for teaching at the various schools ; in fact the whole curriculum. If the schools were to govern the Council, the Council must known something about the schools.

The PRESIDENT said that full reasons were given for the bringing forward of this motion at the last meeting of Council, and it was no fault of theirs if members were not present on that occasion. He deprecated the remarks made by Professor Axe, and said he had introduced elements into the discussion of the subject which had not been introduced by any supporter of the motion. He must remind the Council that due notice of his intention to bring the matter forward was given by Professor McCall at the July meeting, but, unfortunately, owing to a misapprehension on his (the President's) part, the Secretary had not inserted in the Notices of Meeting issued to the Members of Council that the motion would be proceeded with. This should have been done in accordance with bye-law 74. This irregularity, however, only legally affected the election of Examiners ; it did not affect the resolution of the Council to proceed with the election. After the remarks which had been made he should not stand upon his legal right to proceed with the election, but would allow the matter to be reopened throughout.

Mr. HARPLEY said no action had been taken by the Examiners to bring this matter before the Council. There was no documentary evidence that they were dissatisfied with their position, or had too much work to get through. They had got through half their period of five years. He did not, therefore, feel disposed to support the motion.

Mr. SIMPSON asked if this alteration would involve additional expense.

The PRESIDENT said there would only be the additional travelling expenses.

Professor ROBERTSON objected to the augmentation of the number of Examiners, although as the question was pressed very strongly by their friends from the north he had consented on the last occasion to second Professor McCall's motion.

Mr. DRAY said he believed that if these additional Examiners were appointed, it would involve an extra expense of from £100 to £200.

Mr. WALTERS said, as an Examiner in Class A, he had never yet found that the Examiners were too few. He had never heard any complaint either from Examiners or Principals with regard to the mode in which examinations had been conducted.

Mr. COX said the Examiners were sometimes overtaxed, for, although the custom was that nine students should be examined at each examination, they were often called upon to examine ten, eleven, or twelve, and without any extra fee.

Professor WILLIAMS said, although the Council had power to elect a much larger number practically, they had only eight Examiners, who absorbed all the honours and all the emoluments connected with the examinations. It was a great honour to a member of the profession to be an Examiner of the Royal College of Veterinary Surgeons. Why, then, confine that honour to these eight men? Were they the only men in the profession capable of conducting an examination? If men were appointed residing near the towns where the colleges were situated, there would be no travelling expenses at all, for no allowance was made for the first 100 miles. He thought it a pity that an element of discord should have been dragged into the discussion.

There was no reflection upon the Examiners; they were perfectly satisfied with what they had done in the past. They knew the Examiners were often fagged out, for he must confess that to examine practically in the morning, and orally in the evening was very fatiguing work, and if it was continued by the week together, it must be very exhausting. If the honours of the profession were not limited, but the Examining Boards were extended, he felt quite sure the Examiners and the schools would be far better satisfied. He did not see why the Examiners should oppose this resolution; it almost seemed as if they were afraid that their fees would be diminished.

Professor PRITCHARD said, so far from its being a question of looking after the money, at the last examination in Scotland he was £50 out of pocket.

Mr. WALTERS said he had never made one penny-piece by his fees; on the contrary, he had lost money by every examination.

Professor MCCALL said he had never suggested inefficiency on the part of the Examiners, nor did he attribute to them a love of office because they derived money from it. He simply stated that a large sum of money was paid for the examinations of these students, and that it was a great honour to be an Examiner, but he thought that honour ought to be divided.

Professor BROWN said the arrangement as it now stood was the result of careful inquiry by a committee, of which Sir Frederick Fitzwygram was chairman. The idea of a change was to him entirely new, but there could be no great hurry, surely, for the alteration of a system which had gone on with more or less success for some years, and would in the natural course of things expire in about two years more. At any rate, if an alteration was necessary, he agreed with Professor Axe that it might be an alteration which would relate to the colleges as well as to the Examining Boards. He suggested that they should not be precipitate, but that the question might be deferred until more information was placed before the Council.

The amendment was then put to the Council and agreed to, fourteen voting for it, and seven against.

Professor Brown's Pamphlet.

The Report of the Committee of Council appointed to wait on the Veterinary Committee of the Royal Agricultural Society, with regard to Professor Brown's pamphlet, was read.

Professor BROWN said that he attended the committee, and told them that they had utterly mistaken his views from beginning to end; that he most carefully and assiduously endeavoured not to do exactly what they said he was doing. The scheme which he was accused of having originated, which certainly never originated in his head at all, was an extension of a scheme started by the Agricultural Society before he was born, and had been carried out by the Royal Veterinary College ever since; a scheme for allowing members of the Society certain privileges by which they were enabled to apply to the College for advice, and usually the Principal of the College was called upon by the Society to visit cases at any distance at a fixed remuneration. Some years ago they extended the system by dividing the country into a number of large districts, and appointing seven or eight district veterinary surgeons. Subsequently, Earl Cathcart asked him to write a pamphlet to enable farmers to treat cases of emergency in something like a rational way, both in their own interests and in those of the veterinary surgeons. His idea was to get surgeons and farmers to establish a contract system, so that the farmer might always have the opportunity of a little friendly advice from the veterinary surgeon in his district, and might at the same time get from him the medicines which he would certainly get somewhere, so as to abolish as far as possible the system of using adver-

tised nostrums. From the beginning to the end, he (Professor Brown) thought he was doing everything that could be done for the purpose of bringing about a closer connection between the veterinary profession and the farmers. To come to the gist of the whole matter, provincial veterinary surgeons had to send a report of the applications which were made to them on that system, and during the last four or five years of the continuance of the scheme the Society had had two reports, one about two years ago and one before the last veterinary committee. If after this statement they did not come to the conclusion that the whole thing was a tempest in a tea-cup, he really could not compliment them on their powers of comprehension. There was not the slightest question that a very great fuss had been made about nothing, and that if the thing was left alone matters would go on very much as they had done for the last quarter of a century.

Mr. SIMPSON did not doubt Professor Brown's good intentions, but he knew these were not appreciated by those interested in the question, namely, the country practitioners. Members of the Royal Agricultural Society had veterinary privileges of old standing, he knew, for he was a life member himself. They could have visits from the Professors of the Royal Veterinary College, London, on payment of a comparatively small fee, and where the cases were too far off for London aid to be procurable, they could consult at a fixed charge veterinary surgeons who were appointed two or three years ago to act in special cases as consulting veterinary surgeons—an acknowledged higher branch of the profession. To appoint a veterinary surgeon in each county, principally to vend drugs and medicines, was a very different thing, and must tend to lower the profession and to seriously interfere with the calling of the other country practitioners; although in all probability, farmers would now go, pamphlet in hand, to the druggists for whatever they wanted. The Council did quite right to send a deputation, and in time the representations it made would weigh with the Royal Agricultural Society. He did not expect they would at once drop a scheme on which they had spent time and money.

Mr. PERRINS regretted the publication of the pamphlet. It had been copied into the penny journals in his district, and he had been told by several clients it enabled them to dispense with his professional services.

Mr. SANTY said the profession were very much averse to Professor Brown's pamphlet, which not only told farmers the medicines they were to use, but described exactly the way in which they were to treat each individual case.

Professor AXE thought this discussion involved one of the greatest anomalies he had ever heard of. They were endeavouring to put a stumblingblock in the way of education, so far as the agriculturist was concerned, but it did not occur to them that the agriculturist might just as well complain of the instruction given in the agricultural journals to the many veterinary surgeons who were also pursuing the occupation of farmers. Were they, as a profession, dealing fairly with the Royal Agricultural Society, which had expended hundreds and thousands of pounds in elucidating pathological questions which, but for that expenditure, would have remained unexplained? The veterinary surgeons had had the advantage of the money so expended, and it was rather unfair for them to cry out when any member of the profession attempted to give the agriculturist a little instruction in dealing with domestic medicine.

The PRESIDENT thought that all who knew Professor Brown would not credit him with any other than good motives in acting as he had done in this matter, and said when he first saw the pamphlet he did think it would work harm to country practitioners, inasmuch as it put in the hands of chemists all over the country the recipes of a man who was well known in the profession, both in connection with agricultural matters and also with the

Privy Council. He had seen no reason to alter that opinion, and he still thought that published recipes bearing the name of a man like Professor Brown would lead to veterinary surgeons being deprived of a large part of their income. That was the reason why he took action in the matter; but he thought it might now very well be allowed to drop, and they might hope that it could do no harm.

The matter then dropped.

Mr. B. CARTLEDGE said a paragraph appeared in the *Country Gentleman*, which he had been asked by some of the leading hunting men in Leicestershire and elsewhere to bring before the Council. It was headed "Hunting Gentlemen and their 'Vets.'" "A correspondent writes as follows:—'The following letters from a veterinary surgeon were, unfortunately for him, put into the wrong envelopes:—"Sir,—In reply to your letter, I have examined Mr. ——'s two horses. They are both perfectly sound, and likely to suit you well. Your obedient servant ——, M.R.C.V.S."—"Dear ——, Mr. —— is coming to look at your horses. Make him pay; he can afford it. Any wretch is good enough; but don't let on that I've never seen them. Yours truly, ——"'" He was not prepared to make any proposition with reference to it, but it might appear upon the minutes that it had been brought before the Council.

Professor WILLIAMS said he thought it was a dream of the printer's devil.

The PRESIDENT thought the Council could not act in the matter, and the subject dropped.

House Committee.

The report of the House Committee was read and agreed to. It was also agreed that it should be left in the hands of the House Committee to provide offices for the Secretary and the College during the rebuilding.

It was proposed by Mr. B. CARTLEDGE, and seconded by Mr. TAYLOR, and agreed to, "That the whole of the details connected with the new building be left in the hands of the Committee already appointed.

Professor WILLIAMS suggested that the Committee should select their own Clerk of the Works.

It was also agreed, on the motion of the PRESIDENT, that the copy of the front elevation should be sent out with the annual report to every member of the profession.

Registration Committee.

The report of the Registration Committee was read.

Professor WILLIAMS moved "That the recommendations of the Committee be carried out."

Mr. SANTY seconded the motion, which was agreed to.

The Register.

It was proposed by Mr. DRAY, seconded by Mr. PETER TAYLOR, and agreed to, "That the Register be published as usual, and that the names of students about to be examined be added to the Register before publication."

A letter was read from the Privy Council with reference to the withdrawal of certain quotations appearing in the Register.

Mr. TAYLOR moved, "That the quotations referred to be withdrawn, in accordance with the wishes of the Privy Council, and that a letter be sent stating that that course would be adopted."

Professor PRITCHARD seconded the resolution, which was agreed to.

Finance.

The report of the Finance Committee was read.

Mr. TAYLOR proposed "That the report be adopted, and that cheques be drawn to meet the outstanding accounts."

Mr. CARTWRIGHT seconded the motion, which was agreed to.
The obituary list was read.

Auditors.

On the motion of Mr. TAYLOR, seconded by Mr. CARTWRIGHT, Messrs. Broad and Woodger were re-elected Auditors for the forthcoming year.

SPECIAL MEETING.

Professor WILLIAMS said he should withdraw the motion of which he had given notice.

The PRESIDENT said in that case his motion would also be withdrawn.

Professor McCALL said he had received a letter from Sir Frederick Fitzwygram, asking him to support the first part of his motion, "That a third Examiner be appointed to each section of the Final Examination." With regard to the second part of the motion, "That an Examiner be appointed to each section of the First and Second Examination," he was not quite decided, and left the matter in his (Professor McCall's) hands. He was quite aware that Sir Frederick's motion was practically owing to the success of the motion which he (Professor McCall) had the honour to propose, but which had been that day rejected; and he would therefore take the liberty of withdrawing the two motions, so far as Sir Frederick was concerned.

The consideration of the third notice of motion, in regard to the "Law of warranty," given by Sir Frederick Fitzwygram, was deferred until the next meeting of Council.

Dishorning of Cattle, etc.

The PRESIDENT, in bringing forward the question of the dishorning of cattle, and the overstocking of the udders of cows, said he thought this was a matter for the Council to take into its consideration. The process of dishorning—by cutting the horns off close to the head, or half-way off in the case of two-year-olds—was no doubt cruel and unnecessary, and there were many ways in which the same end might be obtained without permitting cruelty at all. The overstocking of the udders of cows was also cruel and unnecessary; he meant that a cow which had recently calved should be kept for a certain period, say twelve hours, without having its udder eased. It was a common practice in markets to leave them for eighteen hours, or even longer, without taking a drop of milk from them, a practice which gave rise to much suffering. He should therefore ask the Council to declare that these practices were cruel and unnecessary.

Professor PRITCHARD said he was sure there was no one in the room who was not thoroughly aware how much he abhorred these operations, but still, as in the case of docking horses, he did not think it was the business of the Council in any shape or way to interfere.

Professor WILLIAMS said it would be a departure from the business of the Council to deal with questions of this kind.

Mr. CARTLEDGE asked what would be gained by passing such a resolution?

The PRESIDENT said his impression was that it would strengthen the hands of the Society for the Prevention of Cruelty to Animals.

Professor McCALL, while agreeing with the President in everything that he had said, thought that that was not the proper place for giving an expression of their opinions with regard to what was cruelty and what was not. He was perfectly willing, as an individual, to do all that he could to put down any such practices, but they could not deal with the subject at that Board.

Mr. WHITTLE said the overstocking of cows in large markets was so well looked after by the Society and by the police, that it was a very rare thing to see it done.

The PRESIDENT, in withdrawing the motion, said he yielded to the Council in the matter, but he had to express a strong opinion that the discussion of such subjects came within their province. He had to thank those gentlemen who had spoken, for their sympathy with the motion.

The proceedings terminated with a vote of thanks to the President.

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of the above Association was held at Aylesbury on the 28th of November last. G. A. Lepper, Esq., President of the Association, entertained the members at luncheon previous to the meeting. On the tables were a number of silver cups and pieces of plate which Mr. Lepper had won at various agricultural shows, by horses which he exhibited (many of which he bred). One valuable and handsome cup had been presented to Mr. H. G. Lepper as a testimonial from gentlemen hunting in the Vale of Aylesbury.

The members present besides the President were: Messrs. H. G. Lepper, T. W. Lepper, Joseph East, James East, Aylesbury; Flanagan, Reading; Drewe, Abingdon; Simpson, Maidenhead; Simpson, Windsor; Wheatley, Reading; Walker, Oxford; Walker, 1st Life Guards; Castle, Thame; Mellett, junr., Henley; Verney, Oxford; Bull, Deddington; Powell, Newton Longville; Emerton, Stony Stratford; Varney, Winslow; Slocock, Hounslow; Professor Pritchard, London; and Kidd Hungerford.

Apologies were received from Messrs. Wragg, Darling, Chisholm, Howard, Sants, Simpson (Witney), Wyndham Bryer, Irving, Hanks, Page, Rostron (2nd Life Guards), Hunt, and Wilkins.

The minutes of last meeting were read and approved,

Professor Robertson was unanimously elected an Honorary Associate, and Mr. J. D. Barford, M.R.C.V.S., Southampton, was unanimously elected a member of the Association. Mr. Walker, Treasurer, submitted a statement of accounts for the past year, which showed a balance in hand of £30.

The following office-bearers were unanimously elected for the ensuing year, viz., President, Mr. W. G. Flanagan, M.R.C.V.S., Reading; Vice-Presidents, Messrs. G. A. Drewe, M.R.C.V.S., Abingdon; G. A. Lepper, F.R.C.V.S., Aylesbury; J. F. Simpson, M.R.C.V.S., Maidenhead; H. L. Simpson, M.R.C.V.S., Windsor. Treasurer, Mr. J. P. S. Walker, M.R.C.V.S., Oxford. Hon. Secretary, Mr. H. Kidd, M.R.C.V.S., Hungerford.

Mr. KIDD gave notice that at next meeting he would move a resolution: That it is expedient for the welfare and encouragement of the members of the Royal College of Veterinary Surgeons that they have free and unlimited choice in the selection of members of the profession to serve on the Council. The members of this Association, therefore, petition the President and Members of Council to take the necessary steps to have clause nine rescinded of Supplementary Charter, granted by Her Majesty the Queen on the 23rd day of August, 1876 (as inserted on page 31 of Register).

Mr. SIMPSON (Maidenhead) introduced the following subject for discussion:—

Would Government Assistance in Regard to the Breeding of Horses tend to encourage Horse-breeders in this country?

Mr. President and Gentlemen,—You are aware that by the rules of this association any member may be called upon by the President to introduce a subject for discussion at our meetings, and it is in obedience to the request of the President that I have prepared a short paper, which, with your indulgence, I will read and ask you to discuss at this meeting.

The subject I have chosen is one of immense national importance, as well as one possessing great interest to us as veterinary surgeons, and on

that account I regret that some more prominent member of the profession has not brought it before your notice, that it might be more ably dealt with. I trust, however, that the discussion which follows the reading of the paper will be of interest to all of us, and that it may be the means of gaining for this subject deeper thought than it has hitherto been favoured with, either by Government or by the individuals who are most immediately concerned.

It is an advantage that this subject should be discussed in a locality which is, I think, essentially a horse-breeding one, and in which reside members of this association who are doubtless in a position to give us valuable information, so that in the end I hope it may be admitted that the short time we have together to-day has not been devoted to the consideration of a subject devoid of interest to a scientific association. Would Government aid in regard to the breeding of horses tend to encourage horse-breeding in this country? This question, though in a somewhat different form, was asked in the year 1873, with the object, more especially, of ascertaining what was the then condition of the country with regard to horses, and its capabilities of supplying any present or future demand; to obtain the desired information, a committee of the House of Lords was appointed to examine witnesses, and to report to the House.

This course possibly was urged upon the Government in consequence of the reported scarcity of horses suitable for army purposes, and the increasing demand by foreign nations for English-bred horses, more particularly mares suitable for stud purposes. The report of this committee appears to have occasioned no alarm, inasmuch as it does not appear to have justified the Government in giving any further consideration to the subject, beyond inducing them to act upon certain recommendations made in that report, which were, however, of a very minor character. It is not my intention to refer further to the proceedings of that committee, until I have brought before your notice other points of interest with regard to my subject.

In the first place, I propose to remind you of the lukewarm interest which the Government of this country has and does evince with regard to this subject, and then to compare that interest with the interest which the governments of other countries have in the matter as regards themselves, and the practical way they have of demonstrating it. Of necessity, I must go somewhat into statistics, but being aware how dry a subject the consideration of figures is, I will promise to be as brief as possible in this respect. I shall then refer to the opinions of practical men competent to give advice in matters of this kind, and whose opinions are worthy of respect. These opinions will refer to what I allege to exist, namely, the scarcity, deficiency of quality, and the increase of unsoundness, as well as of the price, of horses. I will then offer for your consideration and opinion certain schemes which, if adopted, would, in my judgment, tend to remove this unfavourable state of affairs.

The facilities offered, and the encouragement given by our Government to induce owners of mares to breed, may be dealt with very briefly, simply from the fact that it does so little. So far as I am aware, all that is done in England is by very indirect means, and these means do not appear to me to be at all calculated to assist the country in the possession of good racehorses or good country stallions, neither are they calculated to induce the English farmer to retain his best mares, rather than to sell them at a price slightly in excess of their market value to the foreign buyer. Prior to the alteration in the horse taxes, etc., some few years back, those mares used exclusively for breeding purposes were exempt from duty, while for a stallion who actually worked upon the farm, but at the same time covered the mares of his owner, a duty of 10s. 6d. had to be paid, except in those cases where the animal had not reached the age of five years.

Again, a farmer who bred horses for profit, and, perhaps, took one in exchange which he would possibly sell the next week, was charged with the dealer's duty, amounting to £12 10s. per annum.

These manifestly unfair taxes have now been abolished, but it still gave the breeder but scant encouragement to follow his calling. The relief and assistance it gave him, in fact, was so insignificant, that it reminds one of the country squire, who, with an extravagant family, decided that "something must be done to reduce expenditure." Each member of the family declared it impossible to give up his or her pleasures, and at a consultation in which all the members of the family took part, it was decided that, instead of purchasing the *Times* newspaper on the day of its publication, a saving might be effected by hiring that paper on the next day at half the cost. It was, in fact, the old tale of the mountain in labour which brought forth a mouse. I am aware that the sum of 3,200 guineas was granted annually by the Government with a view of improving the breed of racehorses. This sum of money was doled out in sums of a hundred guineas, which amounts were competed for at certain race meetings, such races being known as "The Queen's Guineas." No benefit to anybody, except the owner of an animal who was specially kept to run for these prizes, and who, in the majority of instances, was not good enough to run in first-class company, resulted from this arrangement. This becoming more and more apparent, led to an alteration by which the number of prizes was curtailed, no alteration, however, being made in the amount of the vote. The value of each race being raised to two hundred guineas, the distance to be run being two miles and a half, and the weight to be carried being nine stone. These latter details, however, are, I am informed, under the control of the Master of the Horse, and if this scheme should prove to be as abortive as the previous one, doubtless further alterations will be made with a view to bringing out animals, not only fit to win two-mile-and-a-half races, but those which will be of real benefit to the nation. In my opinion, money given by the Government to be competed for on a racecourse is absolutely wasted, and the withdrawal of Government encouragement which it now gives to racing, would not tend to damp private enterprise, or interfere in any way with the attractions which horse-racing has for the British public.

With the exception, then, of the indirect help I have referred to, it may be fairly said that the Government of this country does nothing to encourage horse-breeding at home, but with regard to India the case is far different. With the sanction of the Secretary of State, stallions are provided for India to the number of 300, with the view of encouraging breeding in that country, and in order, thereby, that the cavalry and artillery stationed there may not suffer from a scarcity of horses. That this latter state of affairs was likely to present itself at one time, appears certain, inasmuch as it was thought necessary to establish large government breeding studs with a view of producing their own army remounts. These establishments were, however, found to be so costly and productive of so little benefit comparatively, that about nine years ago they were broken up, and the system which exists at the present day was then adopted.

I have been unable to refer to any official reports upon this matter, but I am informed that every horse which was turned out of these establishments at three years old (that being the age at which they are considered fit for the ranks in India) cost the Government over a hundred pounds. I do not think surprise need be expressed at these facts, neither do I think that the establishment of similar studs in England would be attended with any better results. These 300 entire horses, to which I have referred, are selected by a competent judge in England, viz., General Thornhill; and are sent to those parts of the country where their services are most likely to be in request. Through the courtesy of the above-named gentleman, I was enabled to obtain all the

information I required with regard to the system of breeding in India, and I was at the same time permitted to inspect some of the horses, which will shortly be sent to that country for stud purposes. There are but two classes of horses sent out, namely, the short-legged, compact thoroughbred, who is in possession of a fair amount of bone, and the Norfolk trotting-horse, with substance and good action. The former, when properly mated, is used with the object of obtaining the cavalry horse, while the latter, with the same care, is relied on for getting the artillery horse. The maximum price allowed to be given for these stallions in England is £350. These horses do not travel the country, but one of each class is stationed in different places, care being taken to select those localities which are easy of access for the owners of mares. It is estimated that each stallion will cover fifty mares; thus, should only three-fourths of the mares prove to be foal producers, nearly 12,000 animals would be added annually to the stock of horses in the country by Government aid alone. The system throughout appears to give satisfaction to all. A staff of inspectors is maintained, at the head of which is a veterinary surgeon Owners of mares who desire to have the services of these horses request that they may be inspected by one or more of the staff, and this is done without charge. If they are considered suitable for breeding purposes—that is to say, they must be of a certain size, they must possess some amount of appearance, and what is of the greatest importance, be free of hereditary disease—a mark is placed upon them, and the possession of that mark entitles them to the services of any of the Government stallions in the country, free of cost. The Government have no claim whatever on the produce, but it takes its chance with other buyers when the animal is fit for the ranks, which, as I have said, in India is at three years old. So essential is it considered that every encouragement should be given to the production of all animals suitable for army purposes in that country, that French stallion donkeys are now being sent there for the purpose of crossing them with the mares, and with a view of obtaining thereby sizeable and active mules. I had the opportunity of inspecting some of the French donkeys which will be sent to India with the next consignment of thoroughbred and Norfolk stallions, and much as I am prejudiced against donkeys, I cannot but admit that they are excellent specimens of their kind.

Time will not permit me to take more than a hasty glance at the system adopted by the Governments of other countries with the view of keeping up their horse supply, and encouraging horse-breeding as a profitable employment. It appears from an official report sent from the British Embassy at Vienna, in 1873, that the breeding of horses is largely and systematically encouraged by the Governments of Austria and of Hungary. The arrangements in each country are under the control of the Ministries of Agriculture. The Hungarian Government that year were possessed of 1,786 country stallions, and from a letter which I received a few days ago from Buda Pesth, in answer to some inquiries of mine upon the subject, I find that this number has been augmented year by year, until at the present day there are in that country 2,155 public stallions—870 of which are English, while the Austrian Government in 1873 possessed 1,600 stallions, and doubtless these numbers have been augmented in the same proportion as those in Hungary. In both of these countries, since the latter part of the last century, horse stud establishments have been maintained, at each of which there are stationed from ten to twenty stallions and 200 to 400 mares. In addition to this, a large proportion of the remaining stallions are sent into different parts of the country, for serving the mares of those who care to take advantage of their presence.

In some cases no charge is made for the services of the horse, while in others a fee varying from two shillings to ten shillings has to be paid,

according to the quality of the horse, but in the case of every mare covered by Government stallions, approval of her fitness to be so used has to be obtained of those in charge of the stallion depôts. The Government does not retain any lien upon the produce thus obtained, and it seeks further to stimulate the breeding of horses by giving prizes to owners of the best stock at the annual horse-shows which are held in every country district. In the year I am now referring to (1873) no less than two thousand pounds were given with this object in the Austrian Provinces. The Government also subsidises the owners of covering stallions for each such horse examined and approved by them for breeding purposes. The stallion has to be produced annually, and from ten to thirty pounds is then paid on his account. The means taken by the Prussian Government to encourage horse-breeding are as follows:—1st. The establishment of three principal breeding studs, intended in the first instance for the supply of the Royal stables with horses, and for the production of covering stallions for the country studs. 2nd. The establishment of depôts for covering stallions. 3rd. Giving prizes to qualified stallions kept by private persons; to good brood mares and foals. 4th. Granting loans bearing no interest to private associations for the purchase of stallions. 5th. State assistance in addition to the stakes at race-meetings. 6th. Assistance in the shape of money granted to parishes for the maintenance of pasture lands for young horses.

The first stud established in Prussia was in the year 1732. The country studs are simply depôts of covering stallions purchased by the State, especially in Germany, as an encouragement to private breeders. There are about twelve of these studs, containing in all about 2000 stallions. From these studs the stallions are distributed annually, at the proper season, throughout the country, the selection of places being entirely at the discretion of the director of the district stud, and the horses are quartered on country proprietors who take an interest in horse-breeding, and who are therefore willing to assist in the object desired, the animals being at all times under charge of servants from the Government establishments. It does not appear that the services of these stallions are gratuitous, a fee of from three shillings to eighteen shillings being charged to each mare for service, according to the quality of the stallion. In the Hanoverian and Hessian studs the fee is invariably three shillings, but on the birth of the foal the owner of the mare is called upon to pay a foal-fee of from six shillings to twelve shillings, according to the quality of the sire. About 2000 pounds is the sum granted annually by the Government in aid of prizes for good stallions in private hands and for good brood mares and produce. The results are reported to be satisfactory, inasmuch as it gives encouragement to peasant horse-breeders to continue their calling. The manner in which private horse associations are assisted by the Government is as follows:—Loans are granted, repayable by instalments in from four to six years without interest, for the purchase of stallions. The loans granted under this head vary from £150 to £225. There are certain rules to be observed by these associations as a guarantee that there will be employment for each stallion, and neglect of the stipulated conditions involves forfeiture of the privilege of paying by instalments. Considerable encouragement is given at race-meetings, no less a sum than £7650 being set apart for this purpose. The sum granted in aid of the maintenance of grazing grounds for foals is but small, amounting only to about £150 per annum. It may with truth be said that it would be hardly possible for the Government of any country to do more in regard to the encouragement of horse-breeding, but the inducements offered are somewhat counteracted by the system which, in England, would possibly be considered oppressive—thus, every horse in Prussia is available for the public service in the event of war. Every horse born is registered, and can be taken at a

price fixed by a committee appointed for the purpose. An officer commanding a regiment of cavalry in Prussia has said that, as far as horses were concerned, he was satisfied regiments could be completed on the third day after mobilization. It is exceedingly doubtful whether this could be said if the Prussian Government did not give practical proof of their appreciation of the necessity of encouraging horse-breeding in every possible way, and I shall have occasion later on to compare the statement of this officer with the answer which was given by a competent authority to a question submitted to him by the committee of the House of Lords when inquiring into this subject in England.

In order to facilitate, as far as possible, private enterprise in the breeding and improvement of horses, the Italian Government has depôts, in which there are about 350 stallions of the best breeds, the greater part foreign, and which, in consideration of a small fee, serve mares belonging to private individuals. As the system of stationing stallions and giving prizes in money, both at race-meetings and at horse-shows, appears to be somewhat similar to that adopted in other countries, it will be unnecessary for me to enter into further details so far as Italy is concerned, except that I might say there are depôts in that country for the rearing (not breeding) of army remounts. These depôts are annually filled with young horses, which are bought at three years old, and allowed to remain at pasture in the depôts until four-and-a-half years old. When the horses have attained this age, they are broken, and are drafted every autumn to the different regiments of cavalry and artillery.

In France, from 1500 to 2000 stallions are kept by the State, which cover mares around their different stations at very low prices. Stallions of private individuals, approved by the State, are exempt from all tax, while those which are *not* approved of pay a tax of 400 francs per annum. One million two hundred thousand francs are distributed annually amongst the population which keep horses, but principally to the owners of good brood-mares. Important prizes are given at the principal race-meetings throughout France. A reserve, for the artillery, of 15,000 horses is kept up, and lent gratis to farmers for agricultural work. These animals would, however, at once be called in by the Government upon a declaration of war. Private societies also give prizes at race-meetings and horse-shows. As, however, I have hitherto avoided referring to aid, other than State aid, I need not enter further into particulars of this class of horse-breeding encouragement, as it would be unfair for any Government, whether in England or abroad, to take credit for the enterprise of societies or of private individuals. Unfortunately I have been unable to ascertain how far other European countries concern themselves in this matter, but I think sufficient has been said to enable you to decide whether England does take that practical interest, not only in encouraging breeding, but in offering those inducements to produce sound and valuable stock which other countries do.

I propose now to refer briefly to what I have alleged does exist, namely, the scarcity of horses, want of quality in those we do possess, increasing unsoundness, and increase of price as compared with twenty-five years ago. Unless I refer to these points, my question may be answered thus: "You have failed to show us that the time has arrived for the necessity of Government interference in this matter." From the facts which I propose to lay before you, and from your daily personal observations, you will doubtless experience no difficulty in arriving at a conclusion which may or may not agree with my own.

As to Scarcity.

In the year 1841 it appears to have been only necessary that we should import from abroad 339 horses, while we could at the same time afford from

our stock in England 4538 horses, and this latter number was actually sent abroad in that year. About twenty years later—I refer to the date of the Crimean war—we appear to have been none too well provided for an emergency as regards horses, as in one year (1853) we had to import no less than 6819. I have before me a return, showing that in 1872 no less than 12,618 horses were imported by us, and you will judge of the proportion which this import bears to the total number of horses in Great Britain, when I tell you that the total of duty-paying horses was 859,358. Now, if we still maintain at this day what we always have maintained, namely, that there is a superiority in the English horse over the foreigner, why is it necessary that we should resort to foreign countries for such large supplies? If we do not import them because they are better than our own, it can be for one other reason only, namely, that our home supply is insufficient. We were, in fact, driven to this course simply because there was a scarcity in our own country. I have, perhaps, selected an exceptional year (1872), and the importation of so large a number may be accounted for by the fact that in 1870-1 we were large exporters of horses, owing to the great demand for army horses for the Franco-German War, and that event doubtless had a very marked effect upon this class of export. The scarcity does not appear to be confined to the hunter and half-bred harness classes. The following figures not only prove this, but show unmistakably that breeding was not carried on very extensively in the year named. The returns laid before Parliament show that the decrease in the number of brood-mares, unbroken horses, and horses used for agricultural purposes *in England alone*, was 15,159—in 1872 as compared with 1870—or over 7,500 per annum.

(*To be continued.*)

SCOTTISH VETERINARY SOCIETIES.

THE third annual meeting of the members of the Scottish veterinary societies took place on December 24th, in the hall of the Christian Institute. There were representatives present from the Scottish Metropolitan Veterinary Medical Association, the Scottish Central Veterinary Medical Association, the West of Scotland Veterinary Medical Association, the Society for the Prevention of Cruelty to Animals, and many gentlemen interested in the proper treatment of horses. Deputations from the North of England and Border Counties Veterinary Medical Association were also present. Professor Walley, President of the Royal College of Veterinary Surgeons, occupied the chair. Among the gentlemen in attendance were—Professors Williams, Edinburgh; M'Call, Glasgow; Lewis, Edinburgh; Dr. Limont, Glasgow; Messrs. Campbell, Kirkcudbright; Rutherford, Edinburgh; Greaves, Manchester; Cameron, Berwick-on-Tweed; Miller, Dublin; Connochie, Selkirk; Brock, Glasgow; Macfarlane, Greenock; Robb, Glasgow; Cunningham, Slateford; Major Lyons, Glasgow; Rev. D. Brown, Glasgow; Mr. Elphick, Newcastle-on-Tyne; Messrs. Robinson, Greenock; Pottie, Paisley; etc., etc. Apologies for absence were intimated from Professor Robinson, London; Captain Russell, Grantham; Mr. Simpson, Windsor; Mr. W. A. Taylor, Manchester; Mr. Borthwick, Mr. Finlay Dun, and other gentlemen.

The CHAIRMAN said this was the second time the society had held its annual meeting in Glasgow. The object of such gatherings was to discuss subjects interesting to the veterinary profession, and to band them together for a variety of purposes. By the arrangements made for the present meeting they would first hear a paper from Mr. Anderson, jun., on the subject of "Cruelty to Animals: Its Prevention, and Cruelty Prosecutions," a subject that they were all deeply interested in, and he might add that the profession

had as much at heart the prevention of that cruelty as the societies that had taken up the matter specially. (Hear, hear.)

Mr. ANDERSON at the outset said his object in taking up such a subject was to try and bring about a more harmonious feeling than at present existed between the veterinary profession and the Society for the Prevention of Cruelty to Animals. The profession, he claimed, was not antagonistic to that society—in fact they were the very reverse—and he felt convinced that no good could result from the efforts of the society unless the profession went hand-in-hand with it. He felt convinced that the practitioners would be only too glad to assist the society in its laudable attempts to suppress and prevent cruelty to animals, provided the society would not plunge so recklessly into prosecutions which were bringing ridicule and scorn upon all connected with it. It was the first duty of a veterinary practitioner to be humane. (Hear, hear.) As trained to the profession, they were able to detect the slightest deviation from good health in animals, and decide upon the kind of treatment they ought to undergo. He held that the alleviation of pain should be their first great object. They had often very painful surgical operations to perform, but there was no excuse for their inflicting great pain on their dumb patients so long as they could obtain chloroform or other anæsthetics, and he would take the present opportunity of urging that these blessed agents should be more plentifully used than at present. Love for animals should be imbued into every child, and taught in every school, and young people found guilty of acts of cruelty towards animals should be smartly punished. Bad drivers, and persons unfit to be entrusted with the charge of horses, often caused the poor animals a great deal of suffering, and he thought that railway and tramway companies should see that all their servants took proper care of the animals entrusted to their charge. In Glasgow, owing to competition and low rates, horses were often made to draw loads unreasonably heavy, which was gross cruelty. A maximum weight should be fixed by the magistrates—say forty-five cwt.—and any one putting on more should be treated as an offender. The work put upon horses in Glasgow was just a species of slow murder, and they lasted on the average for not more than five or six years. Fifty per cent. of the mortality among horses was due to ill usage, injudicious feeding, and overwork. The hard-paved streets were very trying to horses, but in a city that could not be avoided, yet the animals could be saved a great deal of pain and liability to accidents by a plentiful use of sand. There were many acts of cruelty perpetrated in our midst which could not be reached by the society without the aid of the veterinary surgeons, such as starvation, exposure, over-driving, drugging, and operations performed by unskilled hands, needless operations, and, worst of all, operations performed for the purpose of deceiving and defrauding the public. He then called attention to an increasing malpractice, particularly on the part of Irish horse-dealers—that of pulling out the milk or temporary teeth of horses, in order to make young animals appear older. An effort, he urged, ought to be made to put a stop to this at once, not only to protect the public from being defrauded, but to put a stop to such barbarous cruelty, and prevent a young animal being put to hard work at too early an age. Another trick attempted by dealers, that of "bishoping" the teeth to make old animals look young, was an offence that ought to be treated criminally—in fact, he considered that any painful operation, whether performed for the cure of disease or otherwise, if not executed by a veterinary surgeon, or under his direction, the operator should be prosecuted. Any unnecessary pain inflicted intentionally was an act of cruelty, and it was the duty of the public to report all cases of cruelty to the proper authorities, and be prepared, if necessary, to come forward and give evidence. The Royal Society for the Prevention of Cruelty to Animals was an institution that they were all entitled to be proud

of, and they were attached to it by ties of love and duty which could only be loosened by the over-zeal and bigotry into which he was afraid the managers and office-bearers were swiftly drifting. He blamed a few men connected with their profession for interfering with their rights, and said these practitioners ought to be more careful in giving advice in regard to prosecutions. Withal, the Royal Society was deserving of admiration, for the office-bearers, in seeking to protect animals, always took the advice of veterinary surgeons, thereby recognising them to be responsible authorities. He was sorry to say that all the provincial societies did not take that precaution—at all events, the Glasgow Society did not, for it ignored veterinary evidence both *pro* and *con*. He charged its office-bearers, and a few stolid sentimentalists who acted as its managers, with converting it into a persecuting instead of a prosecuting society. He did so, he hoped, in presence of a number of these gentlemen, and he courted their contradiction. He did not desire, by anything he might say, to frustrate the prosperity of the society, but rather to further its interests on a true and honest basis. A few years ago the society appointed Professor M'Queen to be their veterinary adviser, and no prosecution was proceeded with unless it was sanctioned by the professor. This arrangement gave general satisfaction; but because Professor M'Queen had evidently been too honest, or would not give in to every imaginary case that the officers might book, his services were rather abruptly dispensed with. The public was now at the mercy of a few of these uneducated, ignorant officers—men drafted from the police or the army, a most unsuitable source to choose them from. At the head of this persecuting band was a whimsical military officer, who was, he understood, the acting secretary, and drew a salary, or rather an honorary fee, from the subscribers for his services. It was this gentleman who read over the complaints made by the officers, and handed the cases over to the Procurator-Fiscal. He then went on to criticise the way in which the officers went about their work, a horse being stopped on the street and examined and no complaint being made for some weeks afterwards. This delay considerably hampered the owner of the horse in getting up his defence. The evidence of veterinary surgeons and respectable citizens for the defence was usually discarded by the magistrates trying such cases, in favour of that of the officers of the society. It was sometimes painful to listen to these men giving evidence. He then quoted a case against Mr. John Bryson, a respectable contractor, owning upwards of fifty horses, when he (Mr. Anderson) and Mr. Peddie, M.R.C.V.S., gave evidence to the effect that the horse, although an old one, was quite fit for ordinary cart-work. Other seven non-professional witnesses testified that the animal was fit for work; yet in the face of all this evidence the justices, acting on the advice of Mr. George Gray, the assessor, fined Mr. Bryson £3 3s. Since then Mr. Bryson had been at the expense of having the animal examined by Professor M'Call, and another veterinary surgeon, and both of them had declared the animal to be in a perfectly fit state for work. He thought the justices and magistrates should show more consideration for the evidence of qualified practitioners.

The CHAIRMAN said that while he could not hold himself responsible for any opinions that might be expressed by members, he was afraid that Mr. Anderson had some grounds for the charges he had made, but he would rather have heard a paper without such charges. He must confess that he had always found the officers of the society ready to take the advice of a veterinary surgeon when tendered to them in cruelty cases. The system of making horses said to be lame walk long distances to be examined, and the mode of notifying charges to the owners, ought to be amended. As to fixing a load, it would, he was afraid, be rather a difficult thing to accomplish. The custom of dishorning cattle and the overstocking of the udders of cows were matters that the society might take up with advantage.

Professor M'CALL said he agreed with a great deal of what Mr. Anderson had said, but he was sorry that he had made strictures in regard to the office-bearers of the Glasgow Society for the Prevention of Cruelty to Animals, and their officials. No one connected with it, he felt sure, had any private interest to serve, and he was sorry that Mr. Anderson had made remarks which undoubtedly would give great offence, and were not likely to help to bring about that address they all wished for. The officers were paid a fixed salary, and had no interest in bringing up a man in order to obtain a conviction. He was of opinion that before any man was taken into Court his horse should be examined by professional men. He knew that Professor M'Queen as long as he acted gave universal satisfaction, and now that that gentleman's services had been dispensed with great dissatisfaction prevailed. He hoped that the speakers who had to follow would refrain from saying anything personal, or imputing personal motives to the society. (Hear, hear.)

Mr. M'DOUGALL, Helensburgh, was of opinion that in a court of law, when a case of cruelty was being tried, the evidence of a veterinary surgeon should have greater weight than that given by persons who were not experts.

Mr. J. C. BURNS spoke of the good work which the Society for the Prevention of Cruelty to Animals had done since its formation in Glasgow.

Mr. ELPHICK expressed the opinion that no case of cruelty ought to be prosecuted by the society until a veterinary surgeon had reported upon it.

Mr. GREAVES and Mr. CUNNINGHAM thought that some amicable arrangement might be come to between the Society for the Prevention of Cruelty to Animals and the Veterinary Medical Association, which would tend to the more harmonious working of both.

Professor M'QUEEN said the reason given by the Society for the Prevention of Cruelty to Animals for dispensing with his services was that the Procurator-Fiscal had declined to accept his certificates any further as evidence. He had not yet received sufficent proof that that statement was true, and he left it to the meeting to judge whether a procurator-fiscal, having received his certificates for four years, would all at once come to the conclusion that they were entirely useless. He informed Major Lysons that he did not believe the statement, but had heard nothing further about it. While, however, he was no longer connected with the society, he did not agree with Mr. Anderson in many of his statements, and it would be a mistake if it went forth that they did not appreciate the decisions of the magistrates or justices. While veterinary surgeon to the society his chief difficulty in obtaining convictions in cases of cruelty was owing to the fact that he was opposed by the other veterinary surgeons. He hoped there would be no resolution passed condemning the action of the Glasgow Society for the Prevention of Cruelty to Animals.

Major LYSONS said he was sorry the discussion had arisen, not from love of animals, but from animus on the part of Mr. Anderson. He had letters to show this animus on the part of that gentleman, because a certain thing happened. He was not going to defend the society at present ; it would be the duty of the office-bearers to deal with the charges which had been made by Mr. Anderson. It was because the veterinary surgeons could not agree amongst themselves that the society which he represented could not go forward hand in hand, as they would like to do, with the society of which Mr. Anderson was a member. One reason of the disagreement was because the veterinary surgeons were not agreed as to what cruelty was. That was a point which they would like to arrive at. He could assure them that the prosecutions were made immediately after the cases were found out, and in many of the cases he several times warned the offenders before the prosecutions were proceeded with. It had always been his desire to be as lenient as possible, and more especially with poor people who were working horses

that ought to be relieved from work. He could instance cases where he had received certificates that horses were quite fit to work, and the horses had been destroyed almost immediately afterwards. If a definition of cruelty was arrived at, the society would only be too glad to avail themselves of assistance from the veterinary surgeons.

Mr. ANDERSON gave a flat contradiction to the statement of Major Lysons, and said he was quite ready to stand by all he had said in his paper.

On the motion of Professor M'CALL, a resolution was passed to the effect that it would be to the advantage of all parties if, before instituting prosecutions against offenders or supposed offenders, the circumstances of each case were laid before a veterinary surgeon, and that no prosecution should be instituted before the opinion of the surgeon had been obtained, the proprietor of the animal being communicated with either personally or by letter.

Another resolution, approving of the work of the Prevention of Cruelty to Animals Association, was approved.*

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* As it is sometimes well to know what the public think of these proceedings, the following leading article from the *Glasgow News*, of December 25th, is given :—

"In the Christian Institute yesterday a number of veterinary surgeons and cartage contractors listened to and applauded an attack on the Glasgow Society for the Prevention of Cruelty to Animals. It is scarcely necessary to say that the speaker, described somewhat vaguely as Mr. Anderson, jun., did not advocate cruelty to animals. On the contrary, he professed to deprecate it, and suggested incidentally some absurd prohibitive legislation, enacting the maximum load which a horse should be permitted to draw in a city street. In advocating this proposal, which is too ridiculous for criticism, and is much as if the Legislature were asked to measure a man's capacity for work and set a maximum thereto, he advanced certain facts anent the wear and tear of city horses which, if true, are startling. Mr. Anderson, junior—we cling to the 'junior' as in some way distinguishing our hero from the obscure mass of ordinary Andersons—asserted, without contradiction, to an audience of experts, that the life of a draught-horse in the city is only from five to six years, that contractors habitually overwork their horses for profit, and that they systematically use up old and buy new horses rather than spare and maintain in health these useful servants of man. By overwork, by hard treatment, and by injudicious feeding, the life of the horse is cut short. This is a serious indictment to bring against any class; and it might be assumed that having brought it, Mr. Anderson would have proceeded to advocate the claims of the society which exists to check such wanton and selfish cruelty. But nothing of the sort happened. On the contrary, the speaker launched into a bitter personal attack on the society of which Major Lysons is the active guide. He accused the society of instigating reckless prosecutions which covered it with ridicule and scorn. He jeered at the gallant major as 'a whimsical military officer.' He railed at the officials as uneducated, ignorant persons, unable to speak the English language, and as a climax he denounced them as ex-policemen, ex-army farriers, and military pensioners, drawn from a class in which the virtues of integrity, truthfulness, and mercy are conspicuously lacking. Nor did he stop there, in what may be called, in Malayan fashion, his run-a-muck. He asserted not only that the Society for the Prevention of Cruelty to Animals despised the evidence of veterinary surgeons, but that magistrates, paid and unpaid, rejected it without consideration. In a word, he charged the contractors with calculated cruelty, the society with reckless incompetency, and the magistracy with malicious prejudice; and, for a remedy, he suggested a legal definition of disease and cruelty, and the more frequent employment of veterinary surgeons as judicial experts—of course, with experts' fees.

Professor WALLEY then intimated that the next business was to nominate candidates for election to the Council of the Royal College of Veterinary Surgeons.

Mr. RUTHERFORD suggested that Mr. Robinson, sen., Greenock, should be nominated, with Professor Walley and Mr. Mulvey. This, on being formally proposed by Professor WILLIAMS and seconded by Professor MCCALL, was carried.

Mr. ELPHICK proposed that circulars should be sent this year to all the members of the profession, and that the societies interested in the election should defray the expense as formerly. This was seconded by Professor WILLIAMS, and agreed to.

The Dinner.

In the evening the members of the society and their friends dined together in M'Lean's Hotel, St. Vincent Street. Mr. Campbell, of Kircudbright, occupied the chair, and Professor Walley, of Edinburgh, was the croupier. The usual loyal and patriotic toasts were proposed, and warmly responded to.

Mr. RUTHERFORD proposed, "Success to the Conjoint Meeting," and said it had been found that the members of the individual societies had very little

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"Mr. Anderson has made the serious mistake of carrying the 'polemical language' of politics into the affairs of daily life. It is permissible, by our code of political morals, to accuse great, eminent, and respected statesmen of the crimes with which this veterinary surgeon charged the magistracy, and, by implication, all policemen and soldiers. It is not permissible to make, save in specific instances, such accusations against men of whom they might be believed. Lest, then, some harm should really be done to the good work of the Society for the Prevention of Cruelty to Animals, it may be well to point out where the accusations fail; but before doing so it should be observed that the reason why this wild talk calls for comment is, that it was frequently applauded by an audience of contractors and veterinary surgeons, who, in so far, seemed to share in the speaker's animus. There is no reason why the society, which has to do a great work on a small income, should employ a veterinary surgeon to pronounce on each case which it recommends for prosecution. There are many reasons which militate against such a course. If an officer of the society sees a horse suffering from a sore in the street, he has no authority to stop the animal, to convey it to a surgeon's yard, or to demand entrance to the owner's premises for purposes of medical inspection. Further, an ex-farrier, who has assumably worked amongst horses all his life, is, on the face of it, competent to form an opinion as to whether a horse is being worked cruelly or no. This opinion, it must be remembered, is not a judgment. The circumstances have to be stated to the Procurator-Fiscal, who is not called upon to prosecute unless he chooses. Thereafter the whole evidence must be laid before a magistrate, at which stage the accused person can appear by counsel, cross-examine the witnesses, and lead rebutting evidence. To say that evidence is not considered is to accuse the magistrates of gross neglect of duty. To say that it does not always deserve consideration would perhaps be more true. The tendency of experts called to prove something in the interest of their employers is to represent the truth in a light dangerously bordering on falsehood. It is so in all trades, as when one doctor swears that a man is mad and another that he is sane, or one valuator that a property is worth twenty while another vows that it is worth forty thousand pounds. We remember of a case in which a magistrate having personally examined a horse anent whose sores conflicting expert evidence had been offered, found that these had been disguised with a coating of lamp-black, and felt it his duty to say some very severe things of the witnesses. To say that magistrates refuse to consider the evidence of veterinary surgeons

power in regard to furthering the interests of the profession, and it was, therefore, agreed that they should unite in one large body. The gatherings already held had been of the most successful character, and they might now look upon the society as firmly established, and doing valuable work.

The CHAIRMAN, as representing the West of Scotland Association, replied. Country veterinary surgeons could specially appreciate the benefits to be derived from becoming members of such a society, for they could at all times have an opportunity of consulting the leading professors, and the advice of these gentleman was always frankly and promptly given. He hoped that country practitioners would join the society in much greater numbers. Professor Walley and Mr. Pottie also acknowledged the toast, and expressed the hope that the public would yet come to understand the objects of the society much better.

The other toasts were "The Council of the R.C.V.S.," "The Board of Examiners," "The Veterinary College," "The Veterinary Profession," "The Visitors," etc.

MONTREAL VETERINARY COLLEGE.

THE regular fortnightly meeting of the Montreal Veterinary Medical Association was held in the lecture room of the College on the 29th of November. Mr. M. C. Baker, V.S., President, in the chair.

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is nonsense. To say that they refuse to value it more highly than that of practical men who have seen an animal suffering agony is sense. We prefer to believe in the magistrates' sense rather than their accusers' nonsense.

"There can be no manner of doubt that the Society for the Prevention of Cruelty to Animals is doing a great and good work, and that its officials are animated solely by a zealous desire to do their duty as that duty should be done. Equally there can be no manner of doubt that the attack made upon them last night was unreasonable and unworthy. Yet there never is smoke without fire, and it is probable that the accusations would not have been so well received by an audience of contractors and veterinary surgeons had they been absolutely and entirely groundless. There is always a danger that persons engaged in the search for faults may find these where they do not exist. It is so with specialists of all kinds. A mad doctor, to use the colloquial name, will find the wisest of us insane on the slightest provocation. Certainly few eminent men would escape in safety from a talk on general subjects with some specialists on insanity; while the healthiest lungs or the soundest chest are seldom quite free from defects in the eyes of a doctor who only studies these organs. All men deserve hanging in the eyes of an Old Bailey barrister; and even our smaller sins are very serious indeed when exposed to clerical review. It is within the limits of possibility that Major Lysons' subordinates may sometimes take too tender a view of a horse's sores, or too serious a view of its load. Horses, like men, must sometimes be permitted to strain their powers to the limits of endurance, and like men they may on occasion be permitted to work when they are scarcely fit to do so. These things the officers of the Society for the Prevention of Cruelty to Animals should remember. Their duty is to interfere only in cases of absolute cruelty, and this fact should be impressed on them. In such cases, however, they should fear no criticism. The arguments of the man who has most depreciated them go to prove that there is great need for their energy and watchfulness, and they may rest assured that in all reasonable conditions they have the support and sympathy of the public, whose sincere desire it is that the most docile, useful, and lovable of the servants of man should be protected from the cruelty and cupidity of harsh or thoughtless persons."

A large number of students were present, and also visitors.

Mr. Wilcocks, of Guelph, Ont., was unanimously elected a member.

Mr. MAYOR then communicated a case of Flatulent Colic, which came under his notice last summer, which was treated successfully by the operation of enterotomy or puncture of the intestine.

A discussion followed as to the advisability of following this plan of treatment, and also the risk incurred, but it was ageed that in severe cases it was the most successful treatment.

Mr. E. WALLIS HOARE then read his essay "On Observations on the Examination of Horses as to Soundness." The difference between legal and practical soundness was described, and also how, in the present day, the question of practical soundness was of great importance.

The method of examining horses as to soundness was next described, that of the late Professor Dick being taken as the standard. The various defects likely to be met with were also noticed, particular stress being laid on the question of Spavin and coarse hocks, which, it was shown, were very difficult to define in some cases. The importance of testing for lameness and wind was also dwelt on, and the advisability of always removing the shoes in examining the feet for corns, etc.

The requirements of the veterinary surgeon as an examiner of horses were also noticed, which were stated to be a thorough knowledge of the normal conformation, points, and action of the horse; also quickness in observation and perception, so as at once to detect abnormalities, and a proper routine method of examination.

The importance of practice while at college in this branch of the profession was also urged, showing that it was impossible to obtain the knowledge and skill necessary from books alone.

The importance of the veterinary surgeon being able to ride was also dwelt on, as without this art his knowledge of the action and capabilities of horses was very superficial. This is especially necessary if he practises in a country where many hunters and saddle-horses are bought or sold.

A discussion followed as to the necessity of giving such a rigid examination in every case, but the essayist contended that any part left out would interfere with giving a proper opinion of the horse.

The question of Spavins and coarse hocks was also discussed, and the reasons why Spavins situated far back in the hock were less liable to cause lameness than those in any other part.

After a few remarks from the PRESIDENT, the meeting adjourned.

At the next meeting Mr. Clement will communicate a case of "Excision of a Tumour from the Neck of a Horse," and Mr. Lambe will read an essay on "Horse Shoeing."

E. A. HOARE, *Member of Reporting Committee.*

ROYAL VETERINARY COLLEGE MEDICAL SOCIETY.

THE Second Annual General Meeting of the above society was held in the Theatre of the College on the 13th of October, 1884. The President, Professor Robertson, occupied the chair. There were present twenty-eight student members and sixteen visitors.

The usual routine of business having been gone through, the report on the work done during the past session was read and adopted.

The SECRETARY said that a review of the past work of the Society afforded much matter for congratulation; consequently much pleasure to him to report on the work accomplished. The past session has been in every way a successful one. Our meetings have been well attended and regular; throughout the utmost unanimity has been evinced, and we venture to hope

that the large fund of information which was placed at our disposal has been productive of good and lasting results. I shall not occupy the time of this meeting with any other general remarks, but will at once proceed to the task of recalling what has actually occurred during the year. There have been twenty-one general meetings, with an average attendance of twenty-three members and five visitors.

At the last annual meeting, the following gentlemen were chosen for office :—Assistant Secretary—Mr. Leonard Burghope; Committee—Messrs. Snowball, F. T. Harvey, E. Taylor, Pemberton, Brett, W. R. Walker, Hammond, Haydon, Oliver, Littlewood, Whigham, and E. R. Butler. From these the following were chosen to act as Vice-Presidents :—Messrs. Snowball, Harvey, Taylor, Pemberton, Hammond, and Brett. Mr. Butler was subsequently chosen to fill a vacancy, the Assistant Secretary being *ex officio* Vice-President.

The following essays have been read and debated upon during the session :—

Writer.	*Subject.*
Mr. D. D. SNOWBALL	"Pleuro-pneumonia."
„ HENRY SMITH	"Antiseptics."
„ F. T. HARVEY	"The Graminaceæ."
„ E. E. TAYLOR	"Castration."
„ L. BLENKINSOP, M.R.C.V.S. ...	"Some Notes taken during a Professional Visit to Madrid."
„ E. R. BUTLER	"Calculi."
„ J. BRETT	"Foot-and-mouth Disease."
„ H. L. PEMBERTON	"Parturition."
„ E. W. BAKER, M.R.C.V.S. ...	"Bowel Diseases."
„ E. R. BUTLER	"Legislation for Foot-and-mouth Disease."
„ F. T. HARVEY	"Dietetic Therapeutics."
„ G. W. HAYDON	"Tuberculosis."

The above essays elicited a considerable amount of discussion, and offered a favourable opportunity for interchange of ideas on the part of members. In addition, large numbers of *post-mortem* specimens have been introduced, some of much interest, and for which gentlemen have from time to time received the thanks of the Society.

Sixty-two gentlemen have sought election during the year; but as several have not complied with regulations relating to the payment of subscriptions, the whole are not admitted to the full privileges of membership.

The prizes offered by the Society to successful competitors have been duly awarded, the Committee having asked Mr. Nicholson Almond, of Ongar, Essex, to adjudicate.

In accordance with a suggestion from the general meeting, the Committee have caused to be posted the list of subjects for competition during the coming session of the Society, so as to allow of members utilising the time between terms.

The following is the list of prizes which have been awarded during the session, together with the names of the successful competitors :—

1. Silver Medal for the best essay read and defended at the Society's meetings since the last annual meeting, awarded to Mr. Henry Smith, for his essay on "Antiseptics."

Bronze Medal for 2nd do., Mr. E. E. Taylor, essay, "Castration."

2. Silver Medal given by the President for the best essay on "The Dieting of Horses," with special reference to the nutritive value of different foods, either alone or in combination. Mr. F. T. Harvey.

Bronze Medal for the 2nd do., Mr. John Blakeway.

3. Silver Medal for the best dissection of the fore-limb, from the knee down. Mr. R. W. Walker.

4. Silver Medal for the best essay descriptive of the Natural Order "Solanaceæ." Mr. Peter G. Bond.

The Committee have met three times during the year, and have discussed especially the matter of providing a reading-room and library for the Society; and upon this point the President has promised to speak to the meeting. It was resolved that some members who had obtained their diploma and left the College should be reminded by letter that their subscription had not been paid, and that if not forthcoming they would not be admitted to the privilege of membership, and their names would be crossed off the books of the Society. The matter of an Annual Dinner was also discussed, and referred to the meeting. The advisability of limiting the competition on Botany and Chemistry to Class A was questioned, and it was proposed by Mr. Walker, and seconded by Mr. Farmer, that in future it be open to all classes. It was also decided that the matter of awarding a prize where there was only one competitor should be referred to this meeting.

The President, faithful to his post, has placed his whole services at our disposal, and I am sure that long after we have severed our union with the College we shall often take a happy retrospect of the Society's meetings, and certainly there will be no more pleasing or prominent object in our backward vision than the impression of the magnanimity of our President, of his ungrudging zeal, of his hearty entrance into everything which will instruct and gratify us. I think only one meeting has wanted his presence since the formation of the Society, and I need scarcely suggest to you that this means his support and the success of the evening.

In accordance with precedent, certificates of fellowship are due to Messrs. Snowball, H. Smith, F. T. Harvey (when M.R.C.V.S.), E. E. Taylor, E. R. Butler, Brett, and G. W. Haydon (when M.R.C.V.S.).

Certificates of membership are due to all members who have obtained the diploma of the Royal College of Veterinary Surgeons during the year, and may be obtained on application to the Secretary.

The finances of the Society were in a flourishing condition.

The election of office-bearers for the coming session was then proceeded with. Mr. F. T. Harvey was elected to the office of Assistant Secretary. Messrs. Bond, Walker, Haydon, Farmer, Leigh, Lukes, Oliver, McCormack, Sugden, West, C. A. Johns, and Littlewood, were elected as the Committee, and Messrs. Bond, Walker, Farmer, Haydon, Leigh, and Lukes, Vice-Presidents.

The President, after congratulating the Society on its work and position, said that he hoped before long to make an announcement relative to the provision of reading-room accommodation for the members; he had a scheme which was not yet sufficiently elaborated to lay before the meeting.

It was resolved to allow the arrangements for the class A prize to stand as at present, also that the members of the Society should dine together annually if forty names were handed to the Secretary early in November.

Resolutions of thanks to the officers for the past session terminated the meeting.

Army Veterinary Department.

Gazette, December 23rd, 1884.

Veterinary Surgeon on Probation, Harrie Malcolm Maxwell, to be Veterinary Surgeon. Dated 11th June, 1884.

Gazette, December 30th, 1884.

Frank William Sharp, gent., to be Veterinary Surgeon on Probation. Dated 31st December, 1884.

Obituary.

WE regret to have to record the death of Mr. William Leather, of Liverpool, at the early age of 35, the sad event having occurred on the 27th December. After parting with a friend at Lime Street Station, he fell down, and when lifted up, life was extinct. Mr. Leather graduated in 1871, and ten years later became a Fellow by examination. He was President of the Liverpool Veterinary Medical Association during 1882. The melancholy event has caused much regret in Liverpool, where the deceased was held in high esteem, which was shown by the attendance of some hundreds of friends at the funeral.

The death is also reported of John Dollar, M.R.C.V.S., Glasgow, who graduated in 1855; and of T. J. Rippon, Speen, Berks, late Donington, graduated in 1880.

Notes and News.

BLACK QUARTER IN IRELAND.—This disease has caused serious losses among young cattle in the South of Ireland.

RABIES IN VIENNA.—Rabies has been very prevalent in Vienna for some time, and many persons have been bitten by diseased dogs, several of whom (nearly twenty) have died of Hydrophobia.

LIVE STOCK IN NEW SOUTH WALES.—The immensity of the pastoral interests of the Colony may be inferred from the fact that at the close of 1883, during a period of severe drought, it contained 1,646,753 head of oxen, 34,418,488 sheep, 189,050 pigs, and 326,964 horses; the number of stockholders being 38,257.

CONTAGIOUS PLEURO-PNEUMONIA IN THE UNITED STATES.—The Washington Commissioner of Agriculture has submitted to the House a report on the suppression of diseases among domestic animals. The result of an inspection made shows that 561 cattle affected with Pleuro-pneumonia were found in and about New York City and the district of Columbia. Many dairymen in all the large cities where the disease exists have become expert in the management of cattle. As soon as the first symptoms of the disease are seen, the animals are sent to the slaughter-house. The exact number of infected cattle cannot be determined. The report states that this disease was taken into Illinois and Kentucky in the past summer from a herd in Ohio; it had been carried into Ohio by cattle purchased in the vicinity of Baltimore.

GOVERNMENT STALLION SERVICE IN ITALY.—We learn from the November bulletin of the Ministry of Agriculture, Rome, Italy, that the number of stallions in the Government service, in 1884, was 350, of which 345 were actually serving. These are divided between seven main depôts, sub-divided into service stations for the convenience of the inhabitants of the rural districts. These service stations number 198. The amounts charged for service seem ridiculously small, varying from one hundred lire (about £4) to twelve lire (or about 9s.). Only sixty mares out of 13,576 paid the highest rate for service ; seventy-seven paid £2 10s. (sixty lire) ; 282 paid £1 10s. (forty lire) ; 1820 paid £1 (twenty-five lire), and 13,576 paid the lowest rate. The average number of mares served by each horse was 39·35 during the season, the greatest average number served per stallion in any one district being 43·40, and this happens to be in the Pisa district, where all the highest-priced services were had, as well as the greater proportion of the next highest, and where the revenue per horse was by far the largest. The total amount received for the services of these government horses was 203,444 lire (£8138), an average per horse of about £23.

MEDICAL MEDDLING IN NEW SOUTH WALES.—It was announced not long ago in this Journal, that the Government of New South Wales had resolved to prevent the introduction of Rabies by imposing a quarantine of six months on imported dogs. This measure has excited the wrath of some medical men, who evidently, as is so frequently the case when diseases of the lower animals are discussed, know nothing of Rabies, but whose ignorance does not deter them from writing to the newspapers—one declaring that "such a quarantine is a disgrace to those who made it, and stands as a reflection upon every scientific mind capable of advising the Government upon the subject of Rabies." Mr. T. Chalwin, M.R.C.V.S., Adelaide, has picked up the gauntlet thrown down by these gentlemen, and replies to them in the following pithy communication in the newspaper which had published their letters:—"Sir, —I am averse to answering the inconsequent twaddle of a person totally ignorant of the subject on which he writes, but your sub-leader of to-day, relative to the letter of Dr. H. E. Astles, demands from me a few remarks, not as regards your sub-leader, except to state that you do admit there is just a probability of Rabies being brought into the colony ; but upon the strictures of the enlightened doctor. I am in a measure responsible for the quarantining of dogs which arrive here from Europe by steamer or otherwise, having been requested by the chief inspector of stock to advance an opinion on the subject, and which your correspondent characterises 'as a disgrace to those who made it, and stands as a reflection upon every scientific mind capable of advising the Government upon the subject of Rabies.' The study and treatment of dogs comprised a portion of my curriculum, and during many years I made it a specialty, more particularly at the Royal Veterinary College, Camden Town, under the able guidance of the late Professor Varnell. Therefore I may, without egotism, lay claim to a slight knowledge of the ailments incidental to a dog's life. Were my observations alone confirmatory of the existence of 'Rabies canina' remaining latent in animals for months, I am modest enough to admit I should not put them forward as conclusive evidence, but when men like George Fleming, LL.D., F.R.C.V.S., Dr. Burdon Sanderson, and other equally scientific persons, aver that it is possible for animals to resist the incubation of the malady for six, nine, and twelve months, I think Dr Astles' futile efforts to combat these statements must fall to the ground. It is just possible Dr. Astles has been requested during his practice to diagnose upon some lady's pet pug, and he has mistaken overfeeding, which renders an animal snappish and quarrelsome, but which readily succumbs to a gentle dietary, for a malady like Rabies ; hence he

infers that because in his ignorance of diagnosing between indigestion from overfeeding and the more subtle disease Rabies that it is useless to quarantine. At the most the doctor's remarks are only quotations from authorities; he advances nothing on his own account beyond his kind reflections upon those who are capable of making a correct estimate. Who doubts, as Stonehenge says, 'That a dog has been the faithful companion of man in all parts of the world, and his fidelity and attachment are so remarkable as to have become proverbial'? Does this infer that the animal is not liable to a malignant disease? I should have refrained from inflicting upon your readers this reply, but one cannot escape the flatulent desire of some persons to pronounce upon a subject foreign to their intellect, and silence might be interpreted into admiration.—I am, etc., THOMAS CHALWIN, M.R.C.V.S. Eng.

September 15th, 1884."

Correspondence.

THE ROYAL COLLEGE OF VETERINARY SURGEONS AND ITS EXAMINING BOARD.

SIR,—With many other practical veterinarians, I was glad to see the able and common-sense letter of the Principal Veterinary Surgeon to the Army and Chairman of the Board of Examiners, in last month's issue of the JOURNAL, commenting on the injudicious remarks made in the introductory lectures of two of the Scotch colleges by the professors who addressed the students—remarks which were ill-timed, misplaced, and prejudicial to the common interests of our profession. Early impressions are lasting, and often fatal, and many a young student who sat in those benches will carry, to the day he stands at the examination-table, the idea that the examination, as prescribed by the Royal College of Veterinary Surgeons, is *unfair*, the examiners *unjust*, and the whole institution their common enemy.

I trust the time has not arrived when the Scotch (or, in fact, any) schools are to dictate to the Royal College the standard to which they are to examine their students and what they think should constitute a qualified veterinary surgeon. It is similar to what, from a racing point of view, we call "making an article for your own horse."

It is an admitted fact that we have not the same class of men passing out of the colleges now as fifteen or twenty years ago, even with an extra session and all the scientific advances the profession has made since then. It is not the fault of the teaching, all will admit, nor of the students, for they are better educated as a body, and equally as hard-working; but, as your correspondent, "Reform," in his excellent letter in December number says, "it is due to the fact" that at that time scarcely a student went to college without some previous knowledge of the profession, and had an opportunity, before his *fees were paid*, of finding out the most important of all facts—*if he was suited to the profession he had chosen.*

My experience of over twenty years in the profession is that it is made up of three different classes of men, namely:—First, men who go to the profession for something to do; secondly, men who want an easy way to get a commission in the army; and, thirdly, men who enter the profession from taste, to make a name and a livelihood out of it.

Perhaps, of the three classes, the first are those who do most harm to the profession. They generally are men who are "horsey" inclined; have a little private means or prospects; not enough energy or intellect to become a lawyer, skill or patience to become a doctor, modesty or sanctity to become a parson; and, after three sessions at college, and, perhaps, a summer with

some fashionable practitioner, find themselves fully-fledged veterinary surgeons, with an extensive knowledge of long words and scientific technicalities, but a small knowledge of actual practical work and the thousand and one little details that make the successful practitioner. If they start in practice, they commence by advertising for a *first-class* one, or a partnership in an old-established concern, requiring a strict return of the practice for the previous six years, and knowing nothing whatever about it all the time. When they have secured the good old business and settled, it does not improve; and the old customers find the "new man" not as reliable as their old friend, his predecessor, who has done their business for, perhaps, a quarter of a century, and is retiring from ill-health, or, in other words, "broken down in harness." The "new man" finds the old business not up to his anticipations, lets it dwindle down and go away, and ultimately declares he has "been done," and the profession an uphill game for a gentleman.

The second class to which I refer to, go to join the profession with the view to obtain a commission in the army, and "see life," as they say. They are generally connections of some army man, who has seen what a nice berth the "regimental vet." has; how he is made the pet of the corps, with any amount of horses to ride, and apparently nothing to do. In the abstract, it looks enticing to the embryo warrior, who has longed for a combatant commission, but cannot pass into Sandhurst or trudge through a militia preparation, and has probably wasted two or three years thinking of it. He suddenly makes up his mind to become a "vet.," presents himself at one of our colleges, attends every lecture, dresses well, and, in fact, is a "swell student," gets through his three sessions, obtains his diploma, and, a week or two after, presents himself at Woolwich, and in the old days, in nine cases out of ten, passed, and was duly gazetted. And what is the result? A few months after he is posted to a regiment or battery, and joins apparently under the best circumstances, being received with that kindness which, with very few exceptions, is uniform in the British Army. Every officer is ready to help him, and all seems to be plain sailing. Suddenly a batch of remounts is to be bought, or a few bad cases turn up that require practical skill in their treatment. The colonel, who is probably a man who has lived half his life amongst horsemen and horses, finds his "new vet." a complete amateur. He calls a remount a *bay* which is a *chestnut*, makes out, according to his idea, all the horses wrong in their age, and finally winds up by rejecting some of the very best remounts for some technical imaginary unsoundness, which the colonel and dealer have never heard of, and declares his examination incomplete, in consequence of the young troopers not allowing him to handle their hocks, or be ridden for their wind.

A few years since, when serving at Aldershot, two of these men were sent there and placed in charge of some artillery, and I had to share a portion of my infirmary with them. It was painful to see the complete want of knowledge they displayed in the simple little details of infirmary routine. On one occasion, a troop-horse was to be thrown down for some minor operation. There was an unusual stir in the infirmary all the morning. A bed big enough to exercise a troop on was put down, and, after lunch, the gates were closed. A small army of farriers, smiths, and fatigue men were there with the unfortunate patient. There was first a consultation between the two gentlemen as to which leg the master-hobble should be put on. One said the fore-leg, the other the hind; and the director of the latter, being a fortnight the senior in the service of the other, carried the day, and the horse was thrown, or, rather pulled, on to his head and secured. The operation lasted nearly an hour. I took particular pains to ask both these men afterwards if they had not seen horses cast before, and they honestly told me

they went direct from school to college, where, they said, they saw dozens of horses thrown down, and had watched operation after operation; but, from false pride, they were ashamed to show their ignorance before their fellow-students, and never had a chance of putting on a set of hobbles until that day with their own hands. And it is this false pride which upsets Professor McCall's theory of "putting the cart before the horse." Does he mean to tell any common-sense, practical man that, once a young student becomes a M.R.C.V.S., he will stoop to learn the little common details of his profession? No; he simply dare not do it in the eyes of his friends, who think, once he is a member, he should be above those things; and, even if he did, he could not do them the same as if he were only plain Charley Jones or Tom Smith.

The third class to which I refer are the men whom we have, in most instances, to select our successful practitioners from, either in the army or in civil life. They join the profession to win their way, and nine out of every ten are men who, before they go to college, have had some training in the profession—some as apprentices, some as assistants; some bred in it, and a few, like Topsy in "Uncle Tom's Cabin," "growed up to it."

It would be unjust to say that every successful veterinary surgeon must have served an apprenticeship. I have known several who have not done so; but they have invariably been assisted with plenty of natural taste and talent for the profession, besides being lovers of animals.

The subject referred to by one of the lecturers, of having teachers as examiners, would be most unwise. Examiners should be completely independent; and there is nothing, to my mind, which would make a practical examiner more uncomfortable than to have a teacher at his elbow bursting with advanced scientific lore and technicalities, with a readiness to pronounce on a good or a bad man before he almost came to the table. I well recollect, in the old days of Clyde Street, the good old lady who would often give a helping hand to one of her favourites a day or two before the examinations, if chance offered, by declaring to some of the examiners there was a "poor wee laddie, with a widòd mother," who worked hard through the session, and *should get through;* and he generally did. Some of those men would make a poor show at the matriculation now, and knew more about "pointing and driving" a "large six" than Lindley Murray. Some of them I have followed in their careers; they went back to their districts, settled down into hard-working, useful practitioners, and have done well.

In the Council we have a wise representative body, who will hear fully Professor McCall's grievances against the government of the profession—a far more suitable platform for their discussion than the class-room, and where each side can be fairly heard. It would be better, perhaps, to have the nationality of the Council mixed; but, for myself, I am more a believer in *work* than *words*, and I fear the latter preponderate in the Scotch and the Irish.

WM. PALLIN.

Athgarvan Lodge, Curragh, Ireland.

VETERINARY EDUCATION.

SIR,—I trust you will allow me some of your valuable space, in answer to Mr. J. B. Gresswell's exculpation of Professor Brown. I grant that Professors Robertson and Brown possess different powers of imparting their knowledge to a class, but I cannot grant that the latter does his best in his own special department; although I am sure every student, past and present,

will endorse my opinion when I say that Professor Robertson fulfils the duties in the equine department, and very materially assists the students in cattle pathology, by his practical demonstrations. I can assure Mr. Gresswell that it is not only drenching cows, passing probangs, and all the other minor operations, but many other useful and practical things, such as ages, parturition, breeds of cattle and sheep, position of organs, vessels, nerves, etc., and many diseases.

I may here remark, Sir, that Professor Brown crammed all included in the diseases of the generative system (which means the whole of your work on "Veterinary Obstetrics") into two lectures, of forty-five minutes each. Now, I ask, is this fair to the student? What is a lecturer for, unless it is to mention all diseases, and give his experience of such as he has seen, and offer his opinions on the pathology, etc., of those he has not had experience in? If we are to fall back on books for everything, we can do away with the lecturer, which, I think, in the present instance, would not materially affect the students. Books are all very well, but they need some explanation; and who else should give this but the teacher? Books, in my humble opinion, are only, or should only be, of use to refresh the mind of the student, or give him the opinions of the different writers. I gave the list of his lectures to show how many diseases were left out, and how, in most cases, great stress was laid upon history and legislation, at the expense (to the student) of symptomatology and *post-mortem* appearances, as well as treatment. On perusing the list, I note the following diseases not mentioned, nor were they in his lectures, although he had "power to" do so:—

Croup and Diphtheria, Simple Fever, Cow-pox, Louping-ill and Braxy; Mange in the ox and dog; the bone diseases, *e.g.*, Mollities and Fragilitas-Ossium, Osteo-sarcoma, Rickets, Hoose; Pyæmia and Septicæmia, Endocarditis and other diseases of the valves and vessels leading to and from the heart; no nervous diseases; ten minutes to the organs of vision; Tumours, Nephritis, and Cystitis, different forms of; no diseases of the male generative system, or of the female ditto; no mention is made of the different forms of Metritis (all being classed as Milk Fever); Vaginitis and Leucorrhœa are not mentioned; causes of sterility in both male and female are not spoken of; Ovarian Dropsy, Rheumatism, and a host of other things are forgotten; skin diseases receive little or no attention; Ringworm, in its two different forms, was absent.

Now, as to Professor Brown sparing no pains to procure specimens of diseased organs, I think I can run over all the fresh ones he shoved us—one of Tuberculosis, two of Pleuro-pneumonia Contagiosa, and, I think, another of Grey Hepatization of the lung from Pneumonia. Surely other diseases were frequent enough at the time for Professor Brown to have procured specimens, if he had spared no pains.

In winding up, I must apologise for trespassing on your space, and saying, as a moral, "from those whom we expect the most we often get the least."

"A Late London Student."

Sir,—Allow me a small space for a few brief remarks in reference to the contents of your last issue.

A stranger taking up the number might be pardoned if he asked himself the question, "Is this the year 1884, or is it 1774?" I say he might be pardoned for asking such a question, looking at the nature and scope of much of the kindly and puerile advice anent the education of the veterinary student contained therein.

Some of those who think it their duty to make such remarks seem to forget that it is a simple act of honesty, when a charge is made against any

class of persons or institutions, to state boldly and distinctly that the charge is intended to apply *all round*, or only to a *particular person or institution.*

Personally, I shall esteem it a favour if, when such charges are made in the future, those who make them will perform this simple act of honesty and justice.

THOMAS WALLEY, Principal.

Royal (Dick's) Veterinary College, *December 20th.*

VALUE OF SUBJECTS TAUGHT THE VETERINARY STUDENT.

SIR,—Carefully scanning the article contributed to the December No. of your Journal by Mr. Greaves, it struck me he was attempting to exhibit to the members of the profession his fitness to fill the position on the Examining Board with which the Council have lately honoured him. In doing this I consider he has acted rightly; for we certainly have no evidence of his capacity beyond a few articles contributed to our professional journal—which, by the way, speaking particularly for the recent ones, are hardly models of modern pathology. He seems to have been struck with the extreme difficulty of standing in the portals of the veterinary profession, and complains or laments that the students cannot be seen by the examiners to perform "the scores of operations" for which they are obliged to vouch. He here appears to suggest a certificate from a veterinary surgeon as a way out of the difficulty, and a guarantee for the pupil being a competent operator. Let us beware of this method. For my own part, I have every confidence in the honesty of purpose and ability of our examiners, and I do not wish to see their efforts to ascertain the merits of the pupils supplemented or in any way biassed by the opinions of others; let them stand or fall on their examining capabilities. They have been elected by our representatives; let us abide their decision, or demand their removal. Mr. Greaves then goes on to say the student may never have castrated a colt, attended a parturition, or unnerved a horse—that he may even never have seen these practical details performed. Then comes an afterthought—"only the few cases he may happen to have seen at college." Now I have been connected with the Camden Town School for the last eight years, and know something of its internal organisation, and the arrangements made within its walls for continually bringing sick and lame horses under the very noses of the pupils—and, by the way, I should think (and statistics are easily attainable) there are more operations performed within its precincts than in any veterinary infirmary in the United Kingdom, all of which are done openly for the benefit of the pupils, who may always be present to view, generally to assist, and not unfrequently, as in the case of the cheap practice, to operate themselves; and not only so, but they have the opportunity of watching the cases, hearing the diagnosis and probable result, or should death ensue, of seeing the *post-mortem* carefully and scientifically performed—privileges hardly superseded by country practice. I am aware that these advantages are squandered, or turned to but little account by many pupils; but can this with fairness be laid at the door of the school? Should the teachers who are honestly trying to do their best to turn out, not only scientific but practical men, have such sentences as are to be found in Mr. Greaves's letters cast in their teeth? Those young members of the profession who, like myself, have reaped considerable benefits from the college practice, will hardly be doing their duty to the *alma mater* if they do not add their testimony in confirmation of my statements, asserting that the college practice, so far at least as horses and dogs are concerned, is real honest work, and if it differs from country practice, it is in detail rather than in principle. Most of us, I

think, will agree with Mr. Greaves in principle, that, before all things, it is necessary for a veterinarian to be a practical man, a man of prompt decision and acute perception, and that these qualifications are only to be acquired by intelligent observation. Some of us will, no doubt, differ from him in his scheme for the manufacture of these model veterinary surgeons. His plan appears to be to instruct the builder to put on a doubtful roof at once, and let the foundations and walls look after themselves. He then says we are told all the theoretical subjects must be taught, and these are the subjects he designates by this term—Chemistry, botany, materia medica, anatomy, physiology, histology, morbid anatomy, and pathology. Now if a man is ever to become anything of a pathologist—and I presume this is the aim of the student—can he afford to forego one of these? Can he possibly be a pathologist without a fair acquaintance with each and every one of the subjects mentioned? Nay, more, can he understand and appreciate pathology without having a previous acquaintance with these subjects? If he can, then these so-called theoretical subjects are nothing more than impositions enforced by the R.C.V.S. for the benefit of itself and professors. The questions I would like to submit to the profession are these—Can a man satisfactorily study pathology during his pupilage with a veterinary surgeon, assuming that he has no previous knowledge of the sciences? Has the ordinary practitioner sufficient time and ability to instruct his pupils in the elements of science necessary to an appreciation of pathology? Does a pupil usually do more than acquire business habits and become acquainted with the practical details of his profession? Can these practical details for a veterinary surgeon take the place of scientific pathology? And, lastly, can a student who has simply served a pupilage be considered a pathologist? The last two questions seem to receive a positive answer from Mr. Greaves.

Now with regard to the advantage to be derived from pupilage—namely, the acquirement of business habits and acquaintance with practical details—these in themselves form no mean achievements, and if they were generally mastered by pupils would form strong points for its universal adoption; but are they? The professors at the various schools should know, for they see and instruct more pupils in one year than most practitioners in a lifetime, yet, according to our author, all they have to say on the subject is that it makes young men conceited. Few teachers, I judge, would take any notice of, much less object to conceit in their pupils. For my own part, and speaking for anatomy, I have never been troubled with men conceited with their knowledge of this subject; indeed, I should be very pleased with a pupil who on entering knew something of the skeleton. Such men, in my experience, are rarities. My objection to the pupilage begins when, in consequence, a man becomes so satisfied with himself, and so intensely practical, that he thinks he can afford to laugh at science—being able, as he will tell you, to get his living in the country with or without a diploma. I need hardly say these men hang about the schools for considerable periods, and finally quit without the diploma, afterwards becoming retailers of horse or cattle medicines, prepared frequently from the receipt-book of their qualified instructor, which, as it generally contains remedies for all ills, is an invaluable treasure. This matter of receipt books (which savours of quackery) should, if it form an integral part of many veterinary establishments, deal a blow at pupilage, for it can hardly be considered a good beginning for a man who is afterwards to be told that each case should be individually considered and prescribed for, to have served a pupilage with, we may almost say, an animated receipt-book. There are doubtless many points for and against pupilage; to some men it seems very useful. There are, however, two factors to be considered—the seed and the soil; if both are good, we may fairly anticipate good fruit. Let the guardians of would-be pupils well consider and watch the seed, but by no

means should the soil be neglected ; for it is to mould and nourish the embryo which, at this stage of its growth, is particularly impressionable ; and as these early impressions are to be the boon or stumbling-block of the man, I think the character, both professional and moral, of the teacher should be considered in each individual case, and when these points are duly considered by persons competent to judge, before articling a pupil, then, I think, we may fairly expect to reap the benefits of the system.

Royal Veterinary College, E. S. SHAVE, *Demonstrator of Anatomy.*
Dec. 21st, 1884.

MATERIA MEDICA OR THERAPEUTICS.

SIR,—I observe that, in the introductory lecture recently delivered at the Glasgow Veterinary College, Professor McCall insists upon Materia Medica being moved from the first to the third professional examination, on the plea that it embraces the application of drugs to the cure of disease ; and he gives instances of this in the employment of aloes in the treatment of Pneumonia in the horse, and sulphate of magnesia in constipation in the ox. Surely the learned professor had forgotten that the application of remedies for the relief or cure of disease belongs to quite another subject—THERAPEUTICS, which always comes in at the final examination in human or veterinary medicine, whereas, materia medica is an elementary subject, treating only of the source, composition, physiological action, and doses of drugs, and as such it is taught in all the medical schools to junior students, as chemistry is.

Is not the learned professor equally in error with regard to a baronet who has identified himself with the profession by becoming a member, though I do not think he has ventured to practise? The professor speaks of him as one "who, although a nobleman by birth, yet takes the deepest interest in the profession." If the professor will inquire, he will find that a baronetage, whether acquired for some service rendered to the Sovereign or to the State, or whether chancing to be due to the accident of birth, does not confer nobility. A baronet does not rank as a nobleman. But we have had noblemen, and even royal personages, who have taken the deepest interest in our calling, and I do not think their being so was such an act of condescension as to make us descend to anything like flunkeyism (which it appears some are only too ready to do) in noticing it.

"IGNORAMUS."

TUBERCULOSIS.

SIR,—Allow me a little space for a few comments on the communication by Mr. Harrison, in your last issue, in reference to Mr. McGillivray's remarks on Tuberculosis. Whatever may be the normal temperature of cattle in Westmoreland, I may tell Mr. Harrison, that young, vigorous animals in this country not infrequently give a register of 103° F., and that, too, when in perfect health ; and in dairy cows in this city, the thermometer seldom registers less than 101°-2° F., more frequently 2° than 1°. The arrow mark on Mr. Harrison's thermometer indicates the temperature of the human body, not that of any domestic animal. In reference to his remarks on the danger of consuming milk from tuberculous animals, while I agree with him that in every case in which udder lesions exist, the danger of such consumption is manifest ; my experience as to the existence of softening or calcareous

processes in the udder do not accord with that of Mr. Harrison ; such processes in that organ I have *very* seldom seen. Dr. Imlach's experiments were, in my opinion, useless, seeing that there is no evidence of the udders of the cows having been the seat of tuberculous lesions.

Royal Veterinary College, Edinburgh. THOMAS WALLEY.
January 14th.

"ON THE DOMESTIC VETERINARY TREATMENT OF THE ANIMALS OF THE FARM."

SIR,—I am very much disappointed at the result of the conference of the deputation of the Council of the Royal College of Veterinary Surgeons with the Veterinary Committee of the Royal Agricultural Society, respecting the appointment of certain veterinary surgeons in counties as medicine vendors to agriculturists—the medicines to be supplied according to recipes and formulæ given in a pamphlet by Professor Brown, and written especially for agriculturists.

I am sure all country veterinary practitioners will thank Mr. Simpson for bringing this subject before the Council of the Royal College of Veterinary Surgeons, and thereby proving himself the able champion of the injured members of our profession ; our thanks are due also to the other gentlemen who assisted in bringing the matter prominently forward.

I was pleased to read the very pertinent remarks of Professor Walley at the same Council meeting when the subject was discussed. He very properly remarked: "The most objectionable thing about the proposal was that it implied that a veterinary surgeon, in his own district, was not capable of supplying drugs in such cases as those referred to by Professor Brown."

I would like to ask what Professor Brown had to guide him in making such invidious appointments? How did he know the qualifications or special aptitude of veterinary surgeons in country districts—who had been in practice ten, fifteen, or twenty years—without testing them, either by examination or by inquiring in their various districts as to their success or non-success in practice? He can rest assured that the public knows ; for people don't employ non-successful men, as a rule, if they can get the services of successful practitioners. Besides, I can inform Professor Brown that agriculturists know very well how to protect and take care of themselves, without his being so solicitous for their welfare. *Why not allow them to choose for themselves?* They know the successful practitioner, and will get his services if they can, irrespective of distance. Also with the present facilities for telegraphing, a veterinary surgeon can be summoned a great many miles in a few minutes, and if he keeps good horses—which most of us do in the country—he can cover a distance of ten or twelve miles in little time. And however good the Professor's intentions towards agriculturists may have been, he has really done them harm in recommending them to be their own cattle doctors, guided only by his "Domestic Veterinary Treatment of the Animals of the Farm." Most of us well know how many animals' lives are yearly lost through agriculturists tampering with them and giving quack medicines, thereby often extinguishing every chance of recovery, and wasting valuable time, only sending for us when too late, and only to find that they have mistaken the case, and given medicines which have proved injurious.

I would ask, what are veterinary surgeons trained for? And what is the use of subjecting them to such a long course of study, if agriculturists are to be taught how to treat their own stock by such simple means?

Surely there is a great deal yet to be learned in the science (?) of agriculture, in which the agriculturist can more profitably employ his time, than in trying to learn the art and science of veterinary surgery from a pamphlet, even though it be written by a learned Professor!

He had much better entrust the veterinary treatment of his stock to the qualified veterinary surgeon, who devotes the whole of his time to the study of disease and the practice of his profession.

Surely Professor Brown believes in the division of labour, otherwise what is the use of such a large staff of teachers at the college to which he belongs?

In conclusion, I would remark that if the talented Professor, in his high and responsible position, will devote the whole of his skill and energy to and for *the suppression of contagious diseases, and the keeping of the same out of our country*, he will do more for agriculturists than the writing of a library of books "On the Domestic Veterinary Treatment of the Animals of the Farm," leaving the latter for his less fortunate but hard-worked professional brethren in country practice.

JOHN C. JAMES, M.R.C.V.S.

Thornbury, Gloucestershire.

AN ECHO FROM THE COUNCIL CHAMBER.

SIR,—The grave interests involved and imperilled are my excuse for bringing the following matter before the profession. At the July meeting of Council this year, Professor McCall gave notice that at the next meeting he would move that the Council elect four additional examiners at the "C," or final, examination. This notice was hung up in the Council-room three months, according to the requirement of our Charter. At the October meeting of Council, Professor McCall introduced his motion in a very kindly, temperate, and conclusive manner, without a breath of complaint as to the gentlemen forming the present Board, showing very closely and convincingly how the students were put to unnecessary expense, and examiners to inconvenience, arising from the paucity of examiners. This was seconded by Professor Robertson. Instead of there being twenty-two examiners, as authorised by the bye-law No. 20, there had been, owing to economical considerations, only twelve appointed two and a half years ago. It was clearly and ably shown that in Scotland the Board of Examiners practically consisted of eight men only—once only seven examiners. This state of things was shown to be exceedingly objectionable in three respects.

Firstly—That when so many absentees occurred they had to call in, on the spur of the moment, some outsider, some extraneous member—any one, in fact, to officiate as examiner; men wholly unprepared, and probably wholly unfit, to exercise this grave and very important duty, which to the student is almost life or death. Thus the passing or rejection of a student is decided by this irregular, temporised, and incompetent Board. *Is not there in this ample ground for complaint?* *

Secondly—It was shown that, in consequence of the fewness of examiners, the examinations were prolonged to four or five days, when two days would have sufficed if the proper number of examiners had been present, thus entailing additional and unnecessary expense to both students and examiners. *Is not this a sufficient ground of complaint?*

* We believe there is no foundation whatever for the statement in this paragraph.—ED. V. J.

Thirdly—The examiners who do put in an appearance have nearly always to do double duty; one examiner has to do two examiners' duty, and on one occasion one examiner had to do the work of three examiners in one day.* Is it a matter to be wondered at that the examiner's brain should become tired, wearied, and muddled, and unfit to calmly, attentively, and clearly adjudge the merits or demerits of students so examined? *Is not this, I would ask, an ample cause of complaint?* Nearly every man and myself at the Council meeting considered that they had made out a good and satisfactory case, that they had a grievance, and that it ought to be rectified; and the four additional examiners were appointed. Let it be here understood that the London School has rarely, if ever, these matters to complain of, and they seem to have no sympathy or consideration for the other colleges.

We will now examine the reasons advanced for refusing the request made by the Principals of the three Scotch colleges, and, we may presume, by the whole profession in Scotland.

It afterwards transpired that the election was not legal, owing to our secretary having failed to specially announce the election of four examiners in the circular convening the meeting, thinking that the words "*and for other purposes*" were sufficient. Therefore the whole had to be gone over again at the January meeting:—

Firstly—It was argued by one of the London professors that they had failed to make out a case; that there was really no necessity whatever for any addition to the Examining Board; that the London College had no complaint to make; that the examiners had not made any complaint that the work was fatiguing or too much for them to do. This specious argument, I think, has been completely and conclusively refuted to any impartial mind.

Secondly—It was urged that it would incur an expense of £150 annually to have these four examiners. How this was made out was not shown; it was, on the other hand, shown and demonstrated that, with the exception of the railway travelling expenses (which are allowed when the distance is over 100 miles), it would entail *no* additional expense whatever; and had the amendment I was prepared to propose been adopted, even the railway expenses would have been altogether avoided. The railway expenses incurred have been the heaviest for the botany examiner, although his subject is of the least relative value to the student or to the profession generally. I think the argument and objection on this head were entirely removed.

Thirdly—It was argued at the meeting that the Council had no power to elect additional examiners in the middle of the term of five years. I think that member was the only one who held that opinion. I heard it said it was ridiculous. The bye-law is clear on this point: the words are, "The Council shall appoint a sufficient number, not exceeding twenty-two persons, to constitute a Court of Examiners, and shall from time to time fill up any vacancies which may occur." As I read it, the Council could, if it chose, have elected twenty-two persons when the election came on two and a half years ago. The Council considered twelve to be sufficient. Now, finding, after two and a half years' experience, that twelve persons are inadequate to perform the duties, it is perfectly in the power and discretion of the

* We never knew of such an occurrence, and think our correspondent must have been misinformed. So much that is untrustworthy is being disseminated with regard to examiners and examinations by interested persons, that care is necessary in accepting statements regarding them. Mr. Greaves has been misled through not exercising this care. The only examiners who do double duty in one day, are the four who examine in horse and cattle pathology at the final examination. Whether these are unfit to examine—being wearied and muddled—we leave them to say. No complaint, however, was made regarding them until the rejection of students became more marked than usual, and Mr. Greaves has elsewhere given a reason for these rejections.—ED. V. J.

Council to from time to time add, at any time, any number of persons it may require, not exceeding twenty-two persons in all. I think this objection will appear to any unprejudiced mind to be removed; but it appeared strange to me and to others, that Mr. Peter Taylor should move an amendment to this effect—that the additional examiners should not be appointed. He moved this on the ground that the Council had no power to appoint; so anxious was he to carry his point that the President was obliged to restrain his ardour. Professor Axe seconded this amendment, but on totally different grounds, or for totally different reasons—viz., that the necessity had not arisen—that additional examiners were not required; so great was his loquacity and so refined his high-sounding platitudes, he wanted to attach several riders to it—the President was obliged to restrain his ardour—anything or everything, in fact, so as only to swamp the motion. Surveying the whole matter, it was difficult to say whether jealousy, envy, or hatred predominated. After discussion, the amendment was carried by fourteen against seven votes. Unfortunately, there were six members absent, every one of whom was on our side. I have had some experience in these matters, being the oldest member of Council; and it appeared to us that an effort had been made to bring every man up to the scratch that could possibly be got to vote against the motion; they came swooping down into the Council-room in a body (one of the largest Council meetings I have ever seen) especially, as it seemed to us, to swamp the motion, and refuse to grant the Scotch request—refuse to rectify this grievance, regardless of consequences, regardless whether we alienate Scotland from our Council or not, regardless of the fact that they were repeating the egregious blunder which was made forty-one years ago, in this very room, by our predecessors (and who, every man of them, bitterly regretted having done so to their dying day): when Professor Dick made a request that a certain bye-law should be suspended, the Council refused; it only took four minutes to make the breach, but it has taken forty years to heal that breach. Just as we have got a united profession and the Scotch prejudices are dying away, we again sit upon them. In this case we have refused a just and reasonable request, and possibly alienated the three colleges, and, I may say, the whole profession in Scotland. The three Scotch professors had each a motion. Professor McCall's had met with an ignoble defeat. This and the other two had been entered upon the circular convening the meeting; but, seeing the spirit and the tactics employed, Professors Williams and Walley, more in sorrow than in anger, withdrew their motions, seeing the utter hopelessness and inutility of expecting the Council to comply with any request of theirs. I, too, felt exceedingly sorry—too much discouraged and disheartened to propose my amendment, which I had prepared, to the effect that a compromise should be attempted—viz., that since the London College was satisfied with the present Board, be it so (here let me, in parenthesis, observe that at the October meeting Professor Robertson seconded the motion made by Professor McCall to elect four additional examiners; yet, strange to say, by the time January comes round he has quite seceded from the proposition, and changed his mind, saying he had no complaint to make against the present Board of Examiners, and voted against the measure he had seconded previously); but let four additional examiners be appointed—*but appointed out of the members of the profession within one hundred miles of Edinburgh or Glasgow.* By this action you would avoid any railway travelling expenses; this, I think, would meet the approval of our very excellent, economical Treasurer; it would also meet, in a graceful and beneficial manner, the just and reasonable wishes of the Scotch professors and the profession in Scotland.

THOMAS GREAVES, F.R.C.V.S.

[We are of those who think that four examiners might, with advantage, be

added to the number in the practical portion of the "C" examination; but those who think otherwise have doubtless good reasons for doing so. W consider it a grave blunder attempting to constitute the rejection of the proposal referred to, a *Scotch* grievance. Ireland has a right to be considered in the selection of examiners; that country is entirely unrepresented, yet we do not hear of this as an Irish grievance—Irishmen have more sense.—ED. V. J.]

TO CORRESPONDENTS.

E. W. HOARE, MONTREAL.—Will have much pleasure in receiving your paper.

M.R.C.V.S.—Any person can give a certificate of soundness; there is no illegality in doing so. But there would be if he appended the letters M.R.C.V.S. to his name if he had no right to do so.

COMMUNICATIONS from Professor Walley, T. Greaves, F. Smith, R. Poyser, B. A. Clancy, R. McConnell, and others, as well as the reports of the Lincolnshire and Border Counties Veterinary Societies, will appear in our next.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from J. Penberthy, London; A. Broad, London; J. F. Simpson, Maidenhead; J. K. Pilkington, Garston; A. W. Hill, London; G. D. Whitfield, A.V.D., Dublin; R. Poyser, A.V.D., Meerut, India; John C. James, Thornbury; J. J. Sperring, Belfast; E. W. Hoare, Montreal; "A late London Student;" Professor Walley, Edinburgh; E. S. Shave, London; J. B. Gresswell, Louth; H. Kidd, Hungerford; J. Macqueen, Glasgow; H. Dyer, Limerick; T. Greaves, Manchester; J. H. Steel, A.V.D., Rangoon; W. Penhale, Barnstaple; W. Pallin, The Curragh; F. Shaw, Farnham; J. Ritchie, Forfar; B. A. Clancy, Dublin; R. McConnell, Castle Douglas; C. Hartley, Lincoln; Lt.-General Sir F. Fitzwygram, Leigh Park; J. Donald, Wigton; "M.R.C.V.S."

JOURNALS, ETC.: *Quarterly Journal of Veterinary Science in India; Der Hufschmied; Wochenschrift; Recueil de Médecine Vétérinaire; Repertorium der Thierheilkunde; Archives Vétérinaire; American Veterinary Review; Live Stock Journal; Lancet; Animal World; Mark Lane Express; Animalia; Œsterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; Der Thierarzt; Clinica Veterinaria; Tidskrift für Veterinar-Medicin; Annales de Médecine Vétérinaire; Repertorium für Thierheilkunde; British Medical Journal; American Live Stock Journal; L'Echo Vétérinaire.*

BOOKS AND PAMPHLETS: *J. B. and A. Gresswell*, Manual of the Theory and Practice of Equine Medicine; *W. White*, The Story of a Great Delusion; *J. McFadyean*, The Anatomy of the Horse; *M. Horace Hayes*, Training and Horse Management in India; *A. R. Wallace*, Vaccination both Useless and Dangerous; *C. W. Gregory*, The Principles and Practice of Shoeing; Bulletin et Mémoires de la Société Centrale de Médecine Vétérinaire.

NEWSPAPERS: *Glasgow News; Dundee Courier and Argus; Baltimore American.*